

Recognition Issues Clarified by Auto Labor Board Statement

Employers are urged to meet with union representatives while Board is checking membership claims with assurance that such conferences will not be regarded as recognition

LABOR troubles and labor organizations continue to be the dominant problem confronting the industry this week, as progress slowly but surely is being made toward the goal of establishment of order. Confusion still reigns and it will continue to do so for some time.

In order to speed up actual collective bargaining, the Automotive Labor Board has issued a statement urging employers to grant conferences to union representatives without waiting for the verification of membership lists to determine whom the representatives actually represent. "It will be understood," the Board said, "by employers, by employees and by the Board that participation in such conferences by the employers is not to be taken as recognition of any union as

by Athel F. Denham,
Detroit Editor, Automotive Industries

such. Nor are employees' representatives participating in such conferences to be taken as representing any other employees than those determined to be represented by them on the basis of the lists as

dealt with by the Board."

Occasioned by a dispute over whether Fisher Body had recognized the union in its Cleveland plant, this statement supports the stand taken by W. S. Knudsen, GM's executive vice-president. As reported last week in *Automotive Industries*, Mr. Knudsen denied that conferences held at the plant with union representatives constituted recognition as had been claimed.

Looking forward to the ultimate establishment of plant bargaining committees, the Board also said "that if there is more than one group, each bargaining committee shall have total membership pro-rated to the number of men each member represents." This restatement of one of the President's principles indicates that the Board thinks



Mr. Roosevelt meant exactly what he said on this score, Federation Organizer Collins' statement that "we will deal for and with our own people and a pronouncement from Matthew Smith, MESA leader in the same vein, to the contrary.

Virtual collapse of the tool and die strike is foreseen in the failure of the MESA to vote on the question of calling a walkout affecting all plants in the Detroit area at a meeting called for the purpose on Tuesday evening. Following the meeting, Matthew Smith, the Society's leader, said that members would ballot on the question in individual plants during the next few days.

MESA Strike Ineffective

The strike order which the Society directed last week at tool and die jobbing shops in the Detroit area, has not been too effective. Only a bare handful of shops were picketed and in many plants work went on as usual. The Society claimed that 3,000 men were out, but this total is regarded as highly exaggerated. Moreover, a demand by the organization that strikers deposit their tools with the Society was an admission that it was having its difficulties making its strike order effective, as obviously this demand was designed to prevent its members returning to work despite the walkout order.

At a meeting of the Society on Monday, this tool-deposit demand met with criticism from the membership. This meeting was also featured by an admission by Mr. Smith that if the strike did not succeed, it would mean the end of MESA. He also attacked the Automotive Labor Board and said that MESA would permit the Board to settle discrimination cases, but would not permit it to arbitrate strikes, wage demands, etc. It was also announced that at the Tuesday meeting at which the general strike was to be voted on, only members who had deposited their tools would be admitted. This rule obviously was designed to pack the house in favor of a general strike. Whether it was actually enforced has not been revealed, but if it was, the fact that a general strike was not voted is of considerable significance.

The major issue involved, of course, is recognition of the MESA as the official medium for collective bargaining with employees. Unless the strike is successful in this respect—and it appears increasingly doubtful that it will be—there is good reason to believe that the death

knell of the MESA has been sounded.

Strife within the ranks of the A. F. of L. became apparent toward the close of last week, and it will not be surprising if action taken at a meeting of A. F. of L. leaders held in Pontiac on Sunday resulted largely from efforts of William A. Green, A. F. of L. president, and William Collins, chief automotive organizer, to close the ranks on the battlefield.

Mr. Collins here refused to make public the telegram from Mr. Green, which represented the key to the Pontiac meeting. Mr. Collins merely stated to the representative of *Automotive Industries* that the gist of the wire was as follows:

"With full recognition of conflicts and misunderstandings existing at present, the best thing to do now is to give full cooperation to the Automotive Labor Board and the President and have patience and courage to give the machinery a chance to function."

The telegram, to all intents, reverses two different A. F. of L. actions in recent days. The first of these was a criticism of the board and particularly of Dr. Leo Wolman, by William Collins in a telegram to the President. The second was a strike threat on the part of Alexander Marks, Pontiac organizer. It is reported that the telegram urged individual A. F. of L. leaders and organizers to "keep their feet on the ground."

With St. Louis automotive employees having already broken away from the A. F. of L. and Nash workers reported to be heading in the

same direction, there probably is another reason for the action taken—fear on the part of the A. F. of L. of further desertion of its ranks due to inability to keep promises made by local organizers.

In line with this, the conference authorized William Collins to send a wire to Mr. Green pledging the loyalty and support of the Detroit region automotive locals to the A. F. of L.

There is no doubt at present, however, that the A. F. of L. has backed down from its demand for immediate settlement of the representation question, enabling the board to go ahead with its adjudication and mediation of alleged discrimination against union employees.

At the present time some 10 lists of union members have been filed with the automotive labor board, and more are on the way. These lists comprise not only full paid-up members but also every one who has signed an application card to the A. F. of L., whether or not any dues have been paid. The rulings of the labor boards generally have been that union members are such when they have made a partial payment, at least, to the society. It therefore becomes necessary to check the lists against A. F. of L. ledgers, before checking them against factory payrolls.

The job of supervising this work has been delegated by the Labor Board to an organization being set up under the direction of Professor F. E. Ross, an Associate Professor of Accounting at the University of Michigan. The organization is being rounded out as rapidly as possible and will report directly to the Labor Board.

In the meantime some dissatisfaction with settlement of discrimination questions is appearing. It is alleged that in some plants men have been called back to work, but have been given different types of jobs, particularly work which they have not been trained to perform. If this should be the case and the men again discharged for lack of efficiency in their new jobs, it would obviously stir up more trouble.

Another matter which seems to have been cleared up is the reported dissension within the ranks of the Automotive Labor Board. The conference in Pontiac expressed its faith in Richard Byrd, labor's representative, offsetting criticisms of Mr. Byrd from various labor sources. Furthermore, what differences, if any, existed between Mr. Byrd and other labor board members seem to have been ironed out.

American Passenger Car Trends

Type of Rear Axle

(Based on Number of Models Offered)

	Per Cent Semi- Floating	Per Cent Full Floating	Per Cent ¾ Float- ing
1922	39.9	26.8	33.3
1923	54.7	21.3	24.0
1924	61.9	22.0	16.1
1925	64.8	10.2	25.0
1926	80.0	9.0	11.0
1927	83.8	7.1	9.1
1928	86.0	7.4	6.6
1929	86.0	4.50	9.5
1930	90.0	3.00	7.00
1931	87.5	2.27	10.23
1932	87.5	2.80	9.70
1933	85.7	2.90	11.40
1934	85.5	3.20	11.30

JUST AMONG OURSELVES

Wolman, the Man —a True Picture

THE other night we talked with a woman economist who was intimately associated a few years ago with Dr. Leo Wolman in his work with the Amalgamated Clothing Workers.

"What sort of a job is Wolman doing for the automotive industry?" she asked.

"What sort of a person is he?" we countered. "How would you expect him to operate and how successful would you expect him to be as a negotiator?"

Beginning with the statement that Wolman had perhaps the most objective, judicial mind she ever had contacted, my informant praised his abilities as a negotiator, saying: "He has long been an advocate of boards with an impartial chairman, such as the one he now heads, but believes that the chairman should rarely if ever have to make a decision."

Other interesting personal side lights she threw on the mind and methods of the man in whose hands now rest such grave automotive responsibilities, and as she talked one thing became clearer and clearer: the article by Athel Denham entitled "Dr. Leo Wolman—the Man" (AUTOMOTIVE INDUSTRIES, April 7, 1934, p. 422) was just about as accurate and penetrating a character sketch of this important mediator as could possibly have been written. Later we showed

her the article—and she agreed that it was just that. You may want to turn back and read it again in case you skipped over it hastily.

* * *

Good Ethics and Good Business

THE close relation between good business practice and sound ethics gives evidence of appearing more and more frequently as we get into various ramifications of code administration. The unsuccessful operator—the poor credit risk—now become something of a menace, not only to the pocketbooks of his competitors but to the stability of certain phases of the industry as a whole.

A. H. Fagan, credit manager of the Motor & Equipment Manufacturers Association, brings out an interesting slant on this situation when he says: "When jobbers or other customers, who plan to stay in business because of price cutting or other uneconomic business practices, make request for extensions or other unusual credit concessions, manufacturers should agree to no settlement which does not provide for the ultimate payment of 100 cents on the dollar."

He quotes a jobber who complains that "it is no trick to undersell your competitors if you have to pay only from 10 to 30 per cent as much for the goods as your competitors do. That is

practically what some settlements bring about."

All of which simply emphasizes the growing and perhaps permanent community of interest in business practices which NRA thinking as well as code operations is bringing about.

* * *

Executive Energy Reaches New High

WHILE code authorities are arguing about limitation of hours for employees, executives and their assistants in automotive factories are working at a pressure never exceeded in the busiest or the hardest days of the industry.

Golf scores aren't even being discussed in Detroit this spring, let alone being worked on. Eighty-three appointments in the morning find important executives already through the early mail, while the time at which lights in the offices go out at night seem to vary directly with the importance of the executive—the bigger they are, the long the hours.

In fifteen years of constant contact with automotive men and factories we have never been so impressed with the pace and drive at which this business moves as during our visit to Detroit last week. Everybody is moving at top speed.

Some people, of course, always move at top speed, whether times be good or bad. There are some like the executive who said: "Certainly we are busy here. We are always busy, because we keep everlastingly thinking of new things to do to keep ourselves busy." Today everybody is running in high gear.

But along with this extreme activity in the management forces come some reports of decreased output per man in the shop, increased scrap and other difficulties out in more than one factory.—N. G. S.

CAB-OVER-ENGINE DESIGN

by Joseph Geschelin

Engineering Editor, Automotive Industries *

BORN of seemingly unrestrained and certainly unsanitized legislative restrictions on heavy duty road transport the country over, a new type of vehicle has made its appearance in trucking circles. The term "new" is used advisedly since to those who are of the trucking industry this vehicle resurrects the shade of a construction which was rather common many years ago, save for profound improvements in mechanical design and incomparable refinement in appearance.

From now on the truck buyer will have to select his heavy duty equipment from a group of vehicles described as "cab-over-engine," "engine - under - seat," "camel - back," "traffic" and other terms yet to be coined. All these terms are intended to describe a vehicle of a specific design, hereinafter called "close-coupled," featuring a weight distribution of one-third of the gross weight on the front axle and two-thirds on the rear.

Apparently the three following legal requirements wrote the specifications for the new construction:

1. Limitation on rear axle loading.
2. Limitation of gross weight.
3. Limitation on the overall length of single units and combinations.

The foregoing is not intended to set down the legislative requirements in the order of their importance. While in the majority of cases load limitations have been paramount, in other cases the limitation on overall length has been the prime consideration.

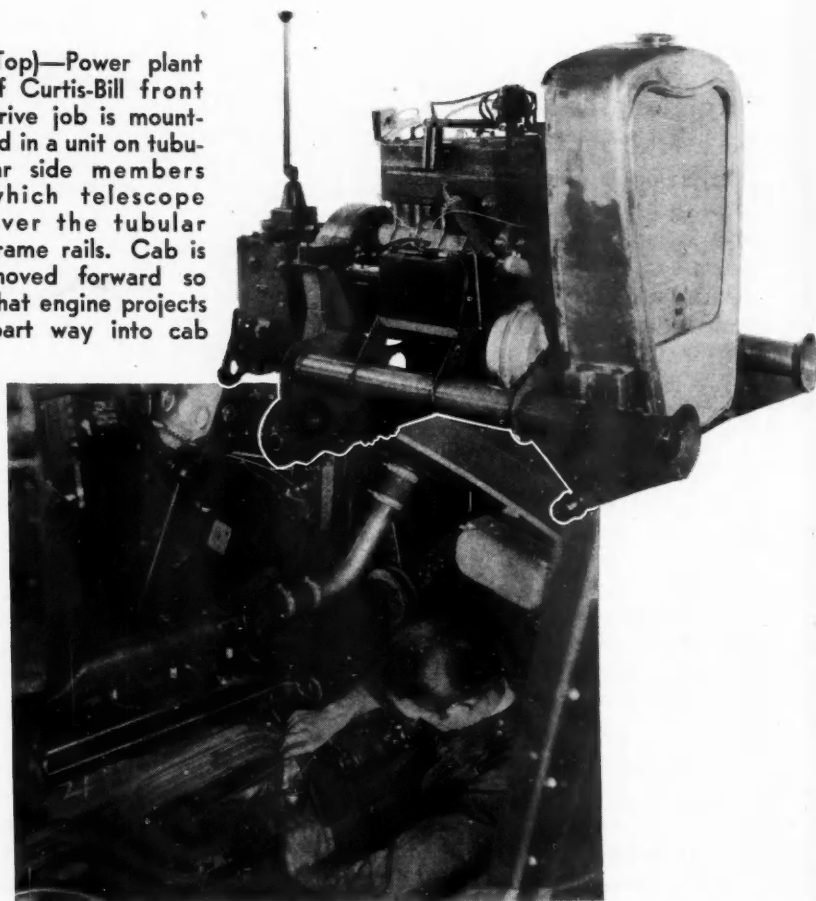
From a purely engineering point of view, the matter of getting a weight distribution of 1/3-2/3 may be handled in a number of ways, each one involving some serious compromise, as will be evident from the following analysis. The various arrangements that have been investigated are:

1. Moving the rear axle back.

*Paper presented before the Metropolitan Section of the S.A.E. on April 19.

April 21, 1934

(Top)—Power plant of Curtis-Bill front drive job is mounted in a unit on tubular side members which telescope over the tubular frame rails. Cab is moved forward so that engine projects part way into cab



Mack Traffic model (below) has two interior engine hoods. For complete accessibility both hoods may be removed and mechanic works in space between engine and frame

This is objectionable because it leads to excessive wheelbase length.

2. Moving the front axle back, commonly termed the "set-back front axle construction." This has been done in existing chassis as for example on General Motors and Mack trucks with a distribution of 30-70. However, this does not reduce the wheelbase to any great extent since the rear axle must be moved back at the same time. And, to obtain a 1/3-2/3 distribution with this arrangement would entail a still

further sacrifice in wheelbase and maneuverability.

3. By combining a partly set-back front axle and a close-coupled cab; also by moving the cab forward so that a portion of the engine protrudes into the cab. Either construction meets the requirements of the desired weight distribution but does not produce the maximum economy in loading space and overall length.

4. Moving the cab completely forward over the front axle and at the

Automotive Industries

Yields Many Operating Advantages Besides Meeting Load-Length Limits

same time moving the rear axle forward, thus reducing materially the wheelbase for a given body length. This construction is the one that has been almost universally adopted.

If weight limitation were the only factor that need be considered, it would be possible to use practically conventional truck design with a set-back front axle or a modified design combining a set-back axle and a slight forward shift of the cab. However, because the limitations are imposed on both length and weight, the "close-coupled" construction has been almost universally adopted because it is the only one that answers both requirements.

At the time this paper was being written announcements of "close-coupled" models had been made by Autocar, Hendrickson, White, Sterling, General Motors and Mack, in about that chronological order. Nelson-LeMoon is also approaching an announcement and at least one other important truck manufacturer hav-

ing national distribution is developing a similar design.

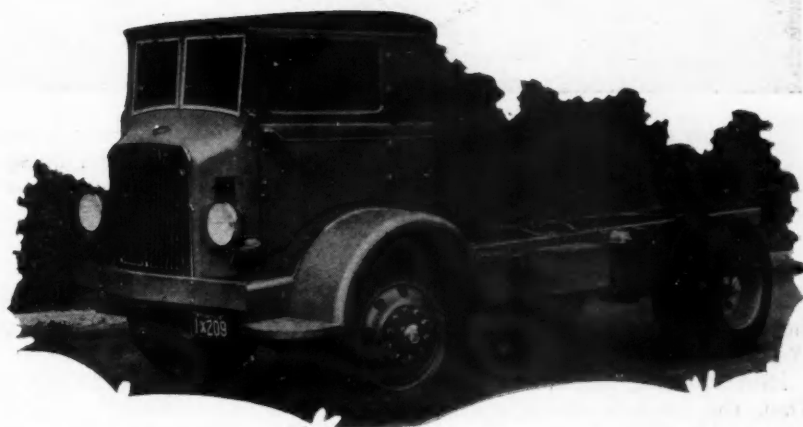
Although F-W-D has not announced a current line of "close-coupled" trucks, I understand they will be prepared to supply such vehicles in the near future. The load

distribution of the proposed line will be 1/3-2/3.

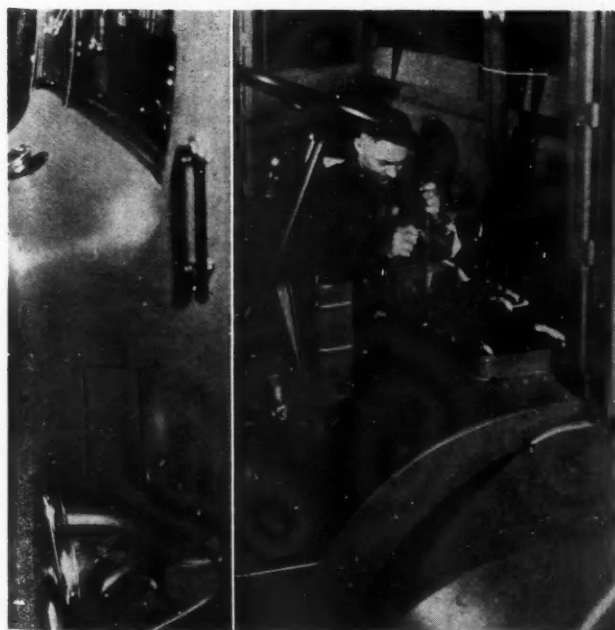
Coming now to a detailed discussion of specific legislative restrictions, I am using Table 1, which was developed through the courtesy of M. C. Horine of the Mack-International Motor Truck Corp. Table 1 shows the effect of gross weight distribution upon permissible maximum gross weight under the various state laws.

For example, if we consider the State of Arizona with a maximum rear axle weight limitation of 18,000 lb. and a maximum gross weight limitation of 22,000 lb., it is obvious that no gain in gross weight is possible inasmuch as a 25-75 load distribution would permit 24,000 lb. gross with 18,000 lb. on the rear axle. On the other hand, if we consider the State of Michigan which has the same axle weight limitation but no gross weight restrictions, we find that as more weight is carried on the front axle the permissible gross weight increases and the "close-coupled" vehicle can therefore increase the permissible gross weight over that carried by an orthodox type by 2900 lb.

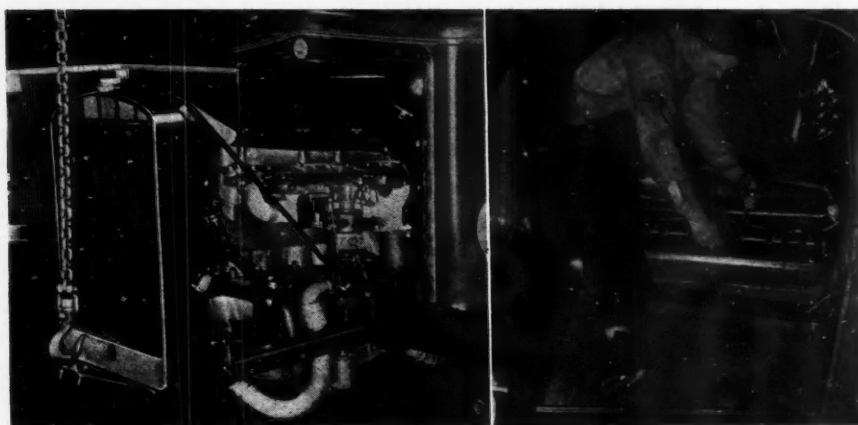
Table 1 shows that improved load distribution is of advantage in 22 states as well as the District of



Autocar engine-under-seat model is typical of vehicles discussed in this paper. Entry to cab by means of single step in front. Height of cab above ground varies with different makes and on two makes, Mack and Hendrickson, entry is by two steps at the rear



Autocar accessibility for major overhauls showing mechanic working in normal position in space between engine and frame



Engine accessibility on General Motors design. Right shows mechanic making minor adjustments inside of cab, valve mechanism being exposed by lifting the interior hood. At left, view showing how entire power plant slides out for major overhaul

Columbia, including such important states as Illinois, Michigan, New York and Pennsylvania.

Nevertheless, we must remember that the impact of legislative requirements cannot be measured statistically. Simply because weight limitations outweigh length limitations numerically does not mean that the latter can be ignored. As a matter of fact, three of the five companies which have announced the close-coupled construction claim to have done so because of the length economy. Of course if the manufacturer is willing to sacrifice the business in localities where length economy is the important consideration, he can meet the larger market with a compromise construction.

The importance of load space economy is emphasized by the fact that such important states as Connecticut, Minnesota, Missouri, Indiana, and Illinois restrict the overall length of heavy-duty road vehicles to 40 ft. or less.

Taking the current "close-coupled" designs at their face value and assuming that the vehicles have been designed according to prevailing high standards we find that the new construction offers a great number of advantages apart from meeting the legislative requirements.

In connection with the following list of advantages, it should be made clear that they are considered as by-products of the construction, since, as pointed out earlier, restrictive legislation has been solely responsible for the development of the vehicle:

1. Better distribution of weight on rear axles resulting in a uniform distribution of load on tire equipment. This should result in considerable economy since the rear

tires no longer will be overloaded.

2. Liberal gain in gross weight with the same axle loading.

3. Better maneuverability due to the short wheelbase.

4. Better ride for the driver due to location over the springs.

5. Visibility unapproached by any other type of construction.

6. Increased loading space of 3 to 6 ft., depending upon make.

7. Increased loading space permits the operator to use his present body and trailer equipment and yet, in most cases, to come within the length limitations.

What the future holds is justly a matter for conjecture since it is hedged about with many variables not the least of which is a guess as to the probable trend of state legislation. But there is an interesting possibility. We find that all the activity pictured above is confined to a class of vehicles representing only 1.36 per cent of total truck production. Wouldn't the "close-coupled" construction be of benefit in some of the lighter truck classifications?

The White Company seems to have made a big stride in that direction with the 701 and 702 series of 1½ to 1½ ton and 1½ to 2 ton capacity respectively, introduced a few months ago. These jobs embody a modified construction with the cab

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Table I—How Load Distribution Affects Legal Gross Weights

State	Legislative Restrictions		Effects		
	Max. Axle weight	Max. Gross 4 wheels	Maximum	Gross	Weights
			25-75	30-70	33-67
Alabama	-----	20,000	20,000	20,000	20,000
Arizona	18,000	22,000	22,000	22,000	22,000
Arkansas	14,820	-----	19,800	21,200	22,100
California	17,000	22,000	22,000	22,000	22,000
Colorado	20,000	30,000	26,700	28,600	30,000
Connecticut	-----	32,000	32,000	32,000	32,000
Delaware	18,000	26,000	24,000	25,700	26,000
Florida	-----	18,000	18,000	18,000	18,000
Georgia	17,000	22,000	22,000	22,000	22,000
Idaho	16,000	-----	21,300	22,800	24,000
Illinois	16,000	24,000	21,300	22,800	24,000
Indiana	16,000	24,000	21,300	22,800	24,000
Iowa	16,000	-----	21,300	22,800	24,000
Kansas	18,500	28,000	24,700	26,400	27,700
Kentucky	-----	18,000	18,000	18,000	18,000
Louisiana	-----	PAYLOAD	-----	-----	-----
Maine	18,000	24,000	24,000	24,000	24,000
Maryland	-----	25,000	25,000	25,000	25,000
Massachusetts	-----	30,000	30,000	30,000	30,000
Michigan	18,000	-----	24,000	25,700	26,900
Minnesota	18,000	-----	24,000	25,700	26,900
Mississippi	12,000	-----	16,000	17,150	18,000
Missouri	16,000	24,000	21,300	22,800	24,000
Montana	16,800	24,000	22,400	24,000	24,000
Nebraska	16,000	24,000	21,300	22,800	24,000
Nevada	-----	25,000	25,000	25,000	25,000
New Hampshire	15,000	20,000	20,000	20,000	20,000
New Jersey	-----	30,000	30,000	30,000	30,000
New Mexico	18,000	-----	24,000	25,700	26,900
New York	22,400	-----	30,000	32,000	33,600
North Carolina	-----	20,000	20,000	20,000	20,000
North Dakota	-----	PAYLOAD	-----	-----	-----
Ohio	18,000	24,000	24,000	24,000	24,000
Oklahoma	16,000	24,000	24,000	24,000	24,000
Oregon	17,000	-----	22,700	24,300	25,400
Pennsylvania	18,000	26,000	26,000	25,700	26,000
Rhode Island	22,400	32,000	30,000	32,000	32,000
South Carolina	-----	20,000	20,000	20,000	20,000
South Dakota	16,000	20,000	20,000	20,000	20,000
Tennessee	-----	18,000	18,000	18,000	18,000
Texas	-----	PAYLOAD	-----	-----	-----
Utah	18,000	26,000	24,000	25,700	26,000
Vermont	-----	20,000	20,000	20,000	20,000
Virginia	16,000	24,000	21,300	22,800	24,000
Washington	18,500	24,000	24,000	24,000	24,000
West Virginia	16,000	-----	21,300	22,800	24,000
Wisconsin	19,000	24,000	24,000	24,000	24,000
Wyoming	18,000	-----	24,000	25,700	26,900
WASH. D. C.	24,640	30,800	30,800	30,800	30,800

Reorganization Held to "Revitalize" NRA Administration and Enforcement

BORROWING a term used by one of its members, "revitalizing" of the NRA is getting under way. Reorganization of the Compliance Division has been completed in preparation for the enforcement drive. The Blue Eagle is to be kept aloft after April 30, and another species, the code eagle, is to be perched by its side. And vague though it is, it is reported that NRA is about to announce a policy on "monopolies" and labor.

Boiled down, the primary purpose of NRA appears to be to greatly simplify its machinery. To this end it is preparing to pass over to industry more of the responsibility for its government. It has been seen for a long time that NRA was bogging down in complications and ramifications. Codifying the vast machinery of a highly industrialized nation has proven to be a titanic undertaking. Its magnitude likely was never conceived at the outset by any single individual or group of individuals or organizations.

Codification Incomplete

Nor has "codification" been completed by any means. While NRA estimates that 90 per cent of industry from a point of employment has been brought under codes, this does not reflect the situation completely. For codes are constantly being attacked, they are always subject to amendment, and many may be greatly changed, almost to the point of being rewritten. So that it hardly can be said the large percentage given really represents the progress made in "codification." The so-called remaining 10 per cent is to be hurried to this point, the PRA (Blue Eagle) meanwhile being continued for their benefit.

Yet, as difficult as the coding process has been and still is, the NRA has found that it was faced with one still harder as it penetrated more deeply into the administrative field. Strikes and threatened strikes, gen-

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erally centering around the collective bargaining section of the Recovery Act, beset the NRA in growing numbers and kept it and the National Labor Board in a state of high tension. Criticisms over various other phases of codes, alleged price fixing, etc., began to come in in increasing volume. Industries became entangled from within and often had sharp differences over codes just as competing industries became enmeshed in rows over provisions in different codes which were held to be conflicting or to overlap. Consumers often became dissatisfied with sales policies instituted under codes of their suppliers. The cry that small enterprise was being oppressed was raised. Likewise complaint, though less vociferous, was made by the larger enterprises that instead of oppressing small enterprise, the latter was given advantages that worked to the injury of the former. Charges of violations piled up fast.

Many of these conditions still obtain and some actually are becoming more critical. The labor situation particularly is a cause of much apprehension, despite the strenuous efforts of the White House, the NRA and the National Labor Board to bring about peace between labor and industry. The White House formula to settle differences in the automotive industry generally has been looked upon as a statesmanlike effort, yet serious threats of labor trouble prevail in the automotive industry and in other industries not having such a formula. The "gold fish" bowl hearings for the public brought out many criticisms of NRA. The subsequent code authority conferences

made it clear that industry as a whole was far from agreeing that it could boost wages 10 per cent and reduce hours to the same extent.

They did give a clear idea as to the need for reorganization of NRA and simplifying its job to keep it from getting into heavier seas and to stimulate renewed confidence in it.

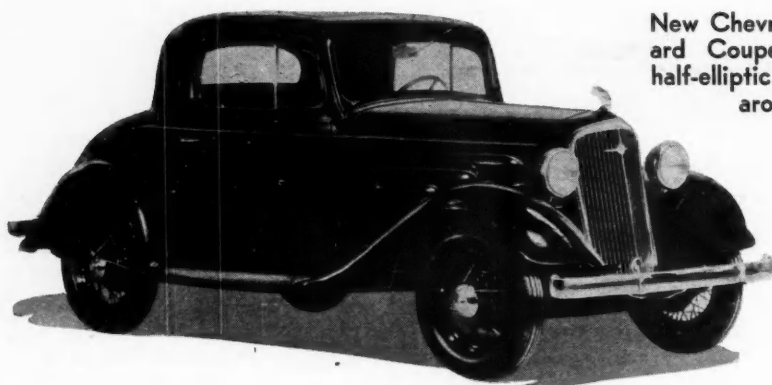
Reorganization has been effected along lines that have a military aspect with its administrative staffs set up with full authority and responsibility for decisions and with Col. George A. Lynch made administrative officer to approve smaller codes, to take charge of the entire office organization and to have broad powers of administration. It is not only a form of decentralizing NRA but it is a move toward passing over to industry the job of governing itself to a greater degree.

Self-Government Necessary

The enforcement drive is the advance move to clear up violations as far as possible so that industry will take over the task with some of the load off its shoulders. More self-government in industry is held to be necessary—really to be the supposed spirit of the Recovery Act itself—both to industry and the NRA, for without industry's aid there is a growing doubt that the NRA can fulfill its task. One of the purposes is to have each industry set up its own labor board to handle disputes, and if this plan works it will take a big burden from NRA. The labor boards in the bituminous coal and textile industries have given a good account of themselves and thus encourage the belief that similar boards in other industries would do likewise. The critical condition in bituminous coal industry arising from new wage adjustments was not so much of a dispute between miners and operators as it was between competing operators themselves, so that it does not reflect on the work

(Turn to page 490, please)

Improved Chevrolet Standard



New Chevrolet Standard Coupe. Car has half-elliptic springs all around

PUBLIC announcement of the 1934 Chevrolet Standard was made on April 14. Prices are slightly higher than previously quoted, the base price being \$490 for the roadster, \$510 for the coupe and \$520 for the two-door sedan and phaeton. Prices thus are from \$85 to \$95 under the corresponding models in the Master line.

Major improvements and changes over the 1933 Standard line include new and wider frames, wider front spring spacing, detail engine improvements, new fenders, longer hoods, and more sloping radiator grilles for improved appearance. A new instrument board is listed among the interior changes.

The frame is made to flare out at the front end to permit a wider spacing of front spring hangers. As a matter of fact, it is wider over its entire length, the object in widening it being increased stability. The wider front spring spacing has resulted in a wider front axle tread, this now being standard tread. Side rail flanges are $\frac{1}{4}$ -in. wider and one subframe member has been added.

In the engine the compression ratio has been increased from 5.2 to 5.35. No claim of increased horsepower is being made however. For greater quietness the valve mechanism has been improved in the same manner as on the 1934 Master models, the addition of a spring at each valve tappet reducing the load on the main valve spring. The camshaft diameter has been increased for greater rigidity, and the cam base

circle enlarged. Cams are offset from the tappet center a greater distance than formerly, for increased

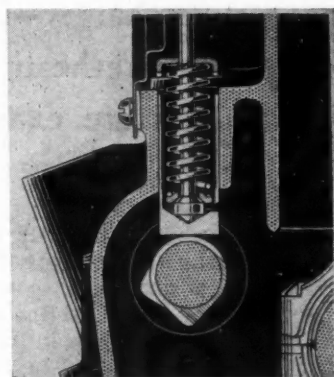
rotation of the tappets in their guides. Rocker arms are new in design, with stronger sections, and detail improvements have been made in the push-rods also.

Changes in the powerplant in general correspond to those made in the Master powerplant this year, including those made in the carburetor, and the inlet and exhaust manifolds, the normalizing of the exhaust

Major changes from last year

	1933	1934
Frame width, front axle.....	26 1/2	27 3/4
at rear axle.....	40 1/8	41 3/8
at front end.....	24 9/16	29 13/16
at rear end.....	43 5/16	44 9/16
Spring spacing, front.....	22 7/8	28 1/8
rear	26 7/8	28 1/8
Front spring seat spacing.....	24 11/16	28 1/8
Front wheel tread.....	54	56
Rear spring seat spacing.....	41 7/8	43 1/8
Compression ratio.....	5.2	5.35
Camshaft diameter.....	1 1/16	1 1/8
Exhaust cam ramp (deg.).....	30	40
Exha. tappet clear. hot.....	.008	.013
Rocker bushing thickness.....	.034	.044
Valve seat width.....	.040	.077
Valve spring pressure, closed, lb...	47	40
open, lb.....	97	75
Tappet spring pressure, open, lb...	None	41
Compression ring width, in.....	5/32	1/8
Exhaust pipe diameter, in.....	2 1/16	2
Cyl. head gasket thickness.....	.045	.052
Steering wheel diameter, in.....	16	17
Brake lining area, sq. in.....	91 1/2	121 3/16

rd Models Carry Higher Prices



Return spring on valve tappet

valves after fabrication, micromatic honing of the cylinder bores, provision of directional nozzles of copper in the cylinder head jackets for better cooling of the exhaust-valve seats, and provision for checking engine timing by means of a neon light. Engine mounting now corresponds rather closely with that used on the 1933 Master, being somewhat more flexible than in the former Standard. The improvement in the cooling system has permitted an increase in the valve-seat width.

Brakes now carry the longer lower shoe—of the same length as the upper shoe—as the Master, increasing the amount of lining. They are now cable-controlled, as on the larger car, and only one cross-shaft is being used with this design, instead of the former two. Cross-shaft mounting is on three bearings, with pedal and lever connections on opposite sides of the “center” bearing.

Rear-axle housings are strengthened by the use of heavier gage

stock. Spring seats are farther apart and closer to the wheel bearings, which reduces the strain on the housings. The ball bearing at the rear of the drive pinion has been replaced by a roller bearing, and the diameter of the shaft at the bearing has been increased to 1.732 in.

The pressure of the clutch spring has been reduced, and braided molded facings are now used. Clutch and brake pedals are supported on the frame.

Hand control of the throttle is

now separate from the foot control, and the stiffness of the accelerator retracting spring has been reduced accordingly.

Fenders are now deeper and extend further down over the tires, and the valley between them and the hood is shallower.

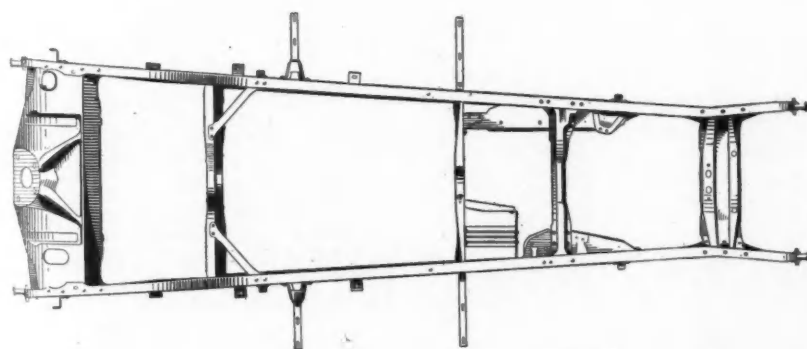
Each front fender stamping now includes one-half of the front splasher stamping. Fender edges are flanged under for stiffness. Detail improvements have been made in the separate fender support member, which is now insulated from the frame by rubber cushions. Hoods are longer, overlapping the cowl to a greater extent than formerly, and are provided with horizontal louvers. Running board rubber mats extend farther to the rear than formerly.

Cowl engine pockets are somewhat deeper than formerly, which has resulted in increased front compartment leg-room.

Steering wheels are slightly larger than formerly. Closed cars have the new Fisher reversed cowl ventilator and no-draft ventilation of the latest type. Windshields are fitted with safety glass. Other body improvements include structural improvements for greater strength, particularly at the doors, use of stronger cowl braces, better windshield sealing, improved door locks and streamline door handles.

The two open models (phaeton and sport roadster) are new to the Standard line. Coil springs are provided to hold the curtains on the phaeton in position.

Standard equipment on all models include speedometer, electric gasoline gage, oil pressure gage, ammeter, vacuum wiper, combination tail and stop light, single-acting shock absorbers and safety glass windshields. All closed models are wired for radio.



The new frame, generally wider and flared in front

Blower Gives Graham More

Reduction in pumping losses offsets much of power consumed in driving supercharger—Distribution improved with less mixture pre-heating—Design and operating difficulties are exaggerated

THAT the public has obtained erroneous ideas of supercharging by its use on racing engines, was emphasized by Floyd F. Kishline, assistant chief engineer of Graham Paige, in a paper read before the Detroit Section of the S.A.E.

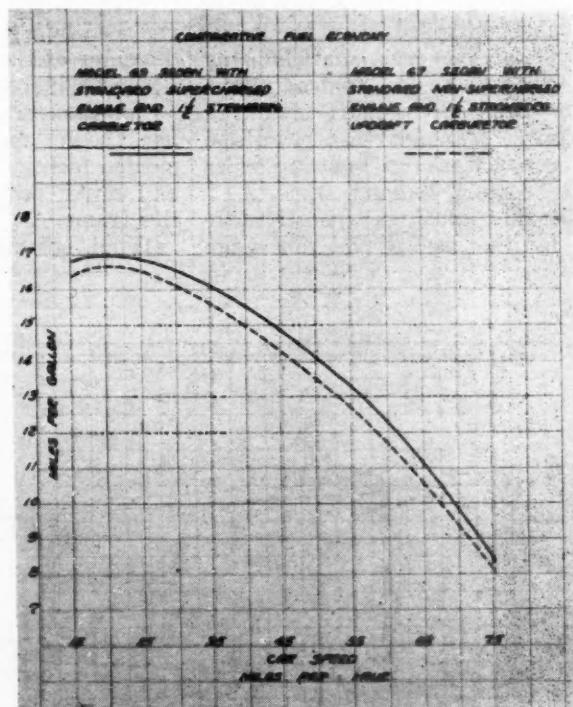
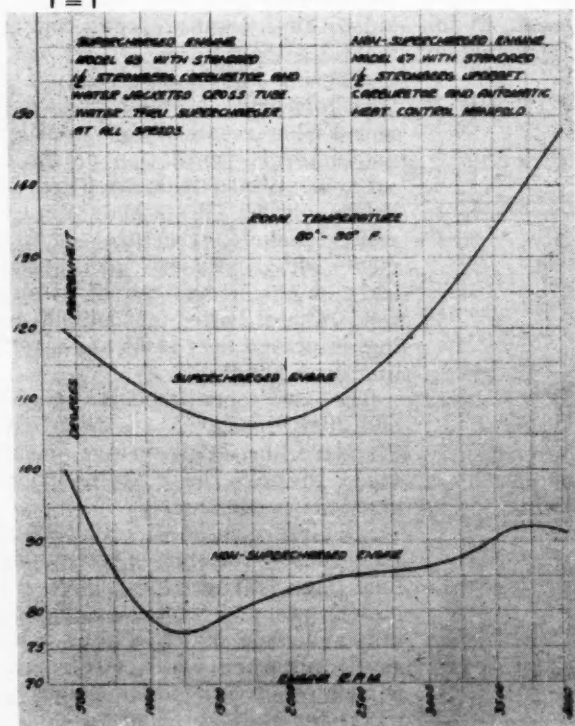
Mention of the word "supercharger," he said, conjures up impressions of a mingled roar and scream, a cloud of smoke, the odor of castor oil, and of a hope that "she won't blow up in the driver's lap." This impression is the result of observa-

tion of racing vehicles in which the one object to which everything else is sacrificed, is maximum power. Such performance, Mr. Kishline explained, is not necessary in passenger cars; what is desired in that case is a reasonable increase in torque and horsepower with an attendant improvement in fuel economy, which improvements are particularly desirable if they can be attained without sacrifice in dependability and quietness of operation. An abstract of the paper follows:

Moderate or low-pressure positive induction, as used on the Graham car, does not greatly increase gas pressures and temperatures. What it does do is to maintain and slightly raise the pressure (and temperature) in the upper part of the speed range. One of the drawings reproduced herewith shows the dependence of mixture temperature on engine speed with atmospheric induction and supercharging respectively.

It should be noted that not all of the power required to drive the blower is lost or deductible from the

A comparison of water outlet temperatures with and without supercharger over the whole speed range



A comparison of fuel mileages with and without supercharger over the whole speed range

re Miles per Gallon

engine indicated power. Tests show that a modern engine acting as a charge pump has an efficiency of only about 50 per cent. This is approximately the over-all efficiency of the positive-induction blower, so, obviously, if the same weight of charge were delivered to the cylinder before the closing of the intake valve, there would be only a slight net loss due to the additional friction.

Tests have shown that the net increase in the over-all friction horse power of this installation, at 3,000 r.p.m., is only about 30 per cent of the power input to the blower, which indicates that most of the power consumed by the blower offsets pumping losses in the engine with atmospheric induction.

It must be borne in mind that at this speed the brake horse power of the engine is increased by 28 per cent, so the weight of charge ac-

tually delivered obviously also is materially increased, and since the specific fuel consumption is less, the net mechanical loss chargeable to positive induction must be small, if there is any at all. The power required by the blower drops rapidly as the throttle is closed, hence this small ratio of loss is maintained throughout the speed range.

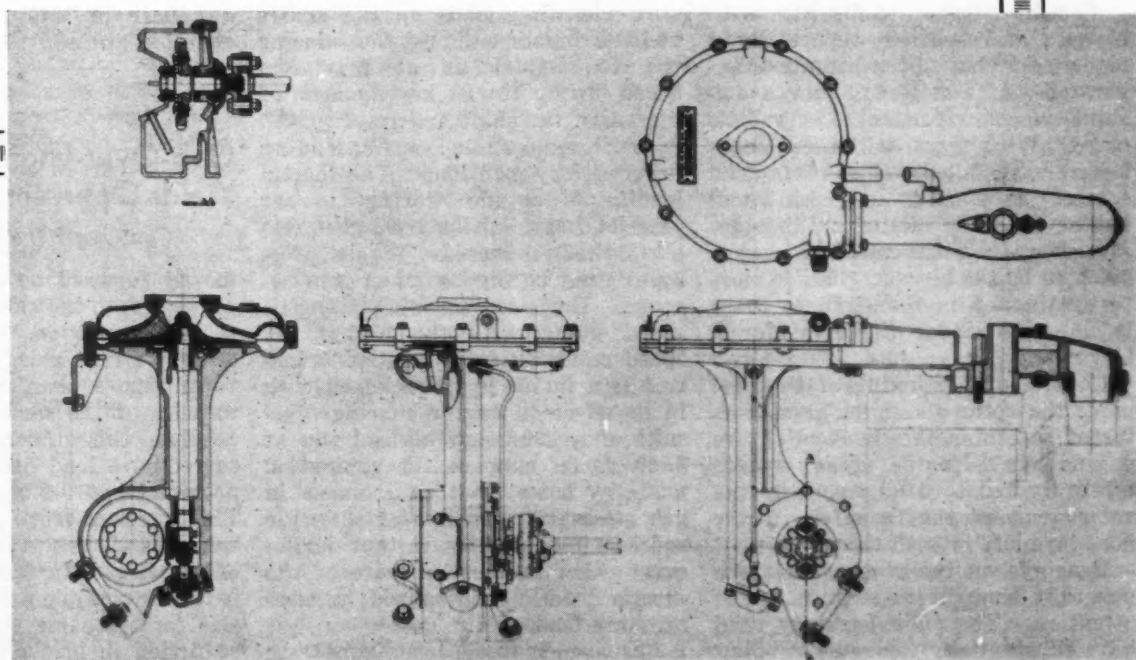
Mechanical agitation of the charge by the rotor has a beneficial effect on mixture conditions, resulting in

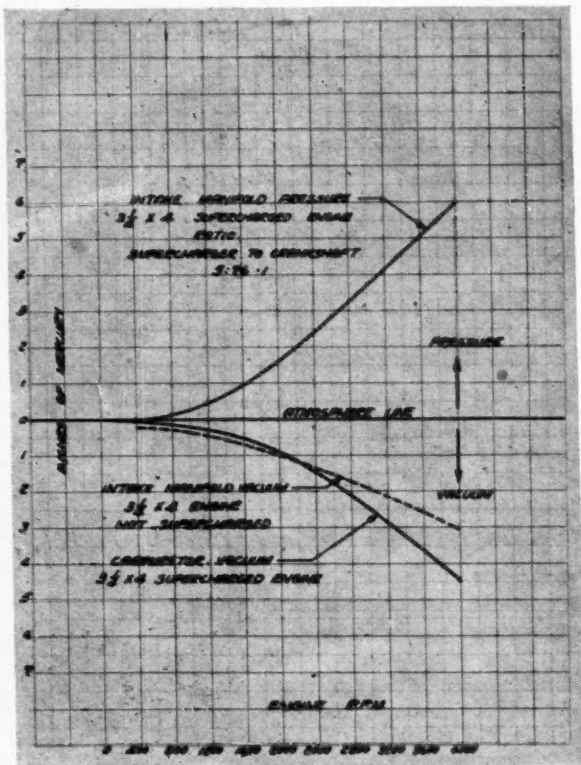
more even firing and smoother operation with a wide range of mixture ratios. In other words, distribution difficulties are practically eliminated. Very little choking is required for

Floyd F. Kishline, Graham assistant chief engineer, whose interesting Detroit Section paper on supercharging is reported here



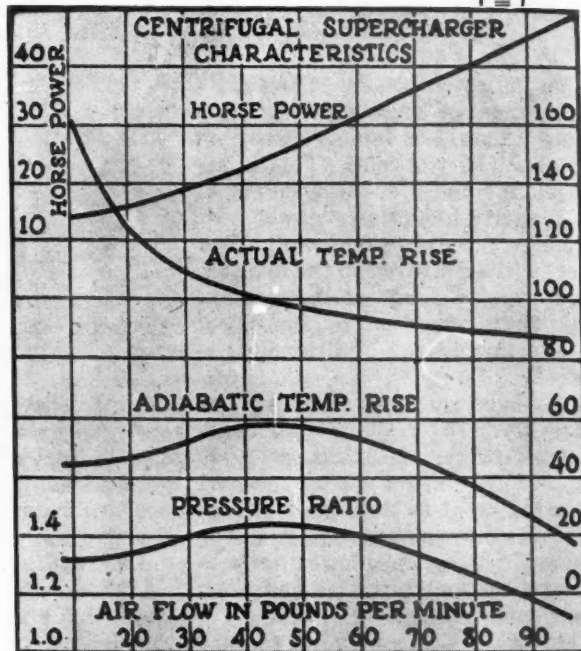
Assembly and sectional views of centrifugal supercharger as installed on Graham engine





Variation of inlet-manifold pressure with speed, with and without blower

Characteristics of the centrifugal supercharger used on the Graham car



starting from cold and for warming up, and it is difficult to make the engine back-fire. Only little heat is required by the mixture and this can be readily obtained from the cooling water; when the throttle is more than half-way open, no heat is required at all.

Various supposed difficulties with blowers, and especially reports about rotor noise, have been greatly exaggerated. As a matter of fact, a constant-velocity rotor makes very little noise. With a conventional 25-cent silencer installed, the rotor can scarcely be heard at the engine, and not at all when sitting in the car. Moreover, the so-called intake roar is subdued by the blower. This is most fortunate, for in the Graham there is no room under the hood for a larger silencer.

Careful proportioning of the disc gives the rotor about the same factor of safety as the flywheel of the engine has. Engine speed is definitely limited to 6100 r.p.m. by the valve gear, so that a safety factor is always left in both these parts.

Bearings on the rotor shafts are generally thought to require heroic attention. The plain bearings used have substantially the same rubbing

velocity as crankshaft main bearings, with lower loads. They are made interchangeable and treated exactly the same as main bearings for clearance, lubrication and material. The rotor shaft is made of crankshaft material and has the same heat-treatment.

Accelerating loads on the shafts and bearings are almost the same as the constant loads at maximum speed, owing to the low moment of inertia of the shaft and rotor.

Additional engine bearing loading is frequently mentioned. The inertia loading of engine bearings so far exceeds that resulting from gas pressures that an increase in gas pressures need hardly be taken into account. However, the higher engine speed going with the higher car speed resulting from positive induction is a factor to be reckoned with in its effect on engine bearings. Results of a 100-hour full-load run at 3600 r.p.m. support the contention made by some, that an increase in gas pressure actually benefits the rod bearings slightly, in that during every other revolution, more of the inertia load is neutralized by gas-pressure load.

Positive induction may not be

applicable to all engines, and certainly will not overcome all of the difficulties that may arise. It may be taken advantage of to reduce engine size and weight, but it is likely that for the present it will be used exclusively to improve the performance, "to keep the light cars out of our hair in this respect," as Mr. Kishline phrased it.

Cab-Over-Engine Design Yields Operating Advantage

(Continued from page 482)

moved forward so that the engine projects into the cab about 9 in. The C. A. dimension, back of cab to center of rear axle, runs about 9 to 14 in. more than for conventional vehicles of the same wheelbase.

When this dimension is utilized correctly, a load distribution of approximately 1/3-2/3 may be obtained. This makes a more pleasing looking vehicle and results in better loading of the tires. In fact in some cases it makes possible a reduction in tire size for the same rating due to the reduction in load on the rear tires.

Increased Responsibilities Go With Labor's Greater Freedom

Unified Means of Cooperation Between Manufacturer and Worker Held Necessary to Promote Lasting Goodwill

THERE certainly is little question but that the provision of a set-up through which matters of common interest to groups of workers can be expressed, is desirable. It facilitates a quick solution of group problems by providing a ready means of bringing such problems to light, whether they deal with wages, with safety, or with other working conditions of common interest. By setting up a means of unified cooperation between manufacturer and worker they tend to promote good will on both sides, *if properly handled.*

There are, however, certain fundamental requirements for satisfactory operation of such an organization. Among these requirements I would stress particularly the importance of having for officers, spokesmen, representatives or administrators of such organizations only such men as are intimately acquainted with the specific group problems of the particular group in question who, in addition have a definite understanding and full recognition of their responsibilities—particularly to the men of their own group.

Unless you have such men in charge the result can be nothing better in the long run than the entire submergence of the individual worker's rights and problems. It would tend to put labor right back where it started from: nothing more than a commodity to be purchased as needed.

For instance, take the matter of wages. Apparently it is the theory of quite a number of men engaged in labor organization administration work in this country that all work-

ers performing the same type of work should be paid the same amount irrespective of their own individual abilities. The inevitable tendency of such a policy would be to limit the earning ability of the more efficient workman to that of the most inefficient.

Even communism doesn't go as far as that nowadays. In the Union of Socialist Soviet Republics today men are being paid according to merit. Even the Soviets have recognized that the man who is willing to work harder or is more efficient than his neighbor is entitled to additional compensation.

by **Athel F. Denham**

Detroit Editor
Automotive Industries

A labor organization which does not recognize the rights of the individual worker in addition to those common to a group can do more harm than good, and when I say that I am referring to the working man rather than industry. By failing to recognize the rights of the individual also, it definitely retards today's tendency toward improvement in industrial relations.

After all you know there is no sharp dividing line between capital and labor. Every working man, for instance, who owns his own home or is purchasing one, and there are thousands of them here in Flint, is in his own way a capitalist. On the other end of the scale the major executives of a corporation are in their own way laborers in that they have definite jobs to do and are responsible to others for the satisfactory performance of their duties. You

can't even point to the stockholder today as the terrible capitalist enemy of the workman, when you remember that the General Motors Corporation alone, for example, has some 350,000 stockholders, many of whom are workers in the corporation itself.

The awakening of social consciousness in industry generally, the recognition of the working man as an individual with the right to an opportunity to earn a living wage and the opening up of new avenues of cooperation between industry and labor have brought with them increased responsibilities for labor. It is an inevitable axiom that whenever you are given greater rights and greater freedom of action, your responsibilities increase. President Roosevelt made that clear as far as this industry is concerned in his statement announcing the settlement which prevented the strike recently.

Labor has been taken into the automotive firm as a full-fledged partner. If it recognizes its new responsibilities, is willing to refrain from attempting to capitalize its new found rights too hastily or beyond reason, its lot is bound to improve.

At the present time the automotive industry has reached a crossroad. With production rising rapidly in line with public demand for its products, and in addition as the result of shortening the hours of labor, a tremendous number of new men have been put to work in automotive plants. Most of these men have been previously employed in the industry at one time or another, but the important changes in design of the newer cars and the new production methods these changes involved, make it necessary to train many of these men for their new jobs. Labor

Excerpt from address to the Flint Rotary Club.

efficiency in automotive plants hasn't been any too good this year as a result, since automotive production is almost entirely a progressive operation and one or two inexperienced men in a progressive production line can slow down the entire line.

In addition wages and costs of materials have been rising steadily until at the present time the industry is faced with the necessity of getting itself adjusted before it takes the next step. Operating efficiency has lagged too far behind. It has to be brought up to standard.

That much maligned and often mistreated word "efficiency" is probably more than anything else the key today to the immediate future of automotive industrialist and laborer alike. If the industry were forced to

absorb immediately further thousands of untrained workmen as, for instance, by a further shortening of working hours or if wages were to be unduly raised right now, prices would have to go up still further. If that should happen sales would inevitably drop off in direct relationship, and employment would similarly shrink to lower levels.

If the industry on the other hand can get a breathing spell now, enabling it to bring up its operating efficiency, costs per car produced can obviously be reduced and prices kept in line. Such a development resulting in a relative increase in car sales would in turn enable the industry once more to absorb additional employees and increase wages where necessary. Labor thus would gain

more by a little patience today in the final analysis.

A further necessity which the automotive industry has to face, it now recognizes, is a better stabilization of production. Already much had been done along this line, but the sudden rise in both production and employment upset calculations materially. Here is a case where there is a definite need for better planning on the part of management. Elimination or reduction of the peaks and valleys in employment is a vital problem which the management will have to solve.

The solution here again requires the cooperation of labor. There must be a willingness on both sides, management and labor, to see eye to eye in working toward this goal.

Reorganization Held to "Revitalize" NRA

(Continued from page 483)

of the National Bituminous Coal Labor Board.

The campaign to establish the Code Eagle apparently is to be tied in with a publicity program to "revitalize" the NRA. It is rumored that the Code Eagle may be released from its aerie by the President in a radio address and that much publicity will be followed under the direction of Charles F. Horner, the publicity artist who had charge of the Liberty Loan campaigns and the Blue Eagle ballyhoo. The idea of a code eagle is to provide a bird with a serial number for each industry. Violators or alleged violators will not get the bird. Hence this is a part of the enforcement drive. Also those not coming to taw with financial support of code authorities will be deprived of the code Eagle.

Under the new set-up, the NRA compliance division will act as a clearing house for unadjusted cases sent in from the field, according to an NRA announcement, and for complaints of alleged code violations filed directly with NRA headquarters. Complaints will be referred back to State directors or to the enforcement and litigation section for action. All cases docketed will be followed until they are settled by court decision or other adjustment.

The program throws heavier responsibilities upon the National Compliance Board, and in order that William H. Davis, its chairman, may devote his full time to the increased duties, he has been relieved as Na-

tional Compliance Director, a post which, with that of Assistant National Compliance Director, has been abolished.

In charge of the new compliance division is A. J. Altmeyer, formerly an Assistant National Compliance Director in charge of the now-abolished labor branch. Frank Healy, also formerly an Assistant National Compliance Director, has been made chief of the government contracts and competition section of the division. The latter section will handle complaints that bidders for government contracts are violators of codes or agreements to which they will be subject. Other shifts in the division include abolition of the trade practice branch with its former chief, J. Marshall Mayes, assigned to continue duties as liaison officer with the Federal Trade Commission; the creation of an analysis branch with William M. Galvin, formerly an assistant counsel, in charge of analyzing all complaints; and the appointments of William Jay Hoff, former assistant chief of the administrative branch to be its chief, and John Swope, to be chief of the field branch. Kilbourne Johnston, son of General Johnson, will devote his entire time to duty as aide to the National Recovery Administrator.

Related to the enforcement policy is said to be a new announcement on monopolies and labor which General

Counsel Donald Richberg of NRA is reputed to have drafted following a conference he and General Johnson had with President Roosevelt. Nothing has been given out as to what this policy will be though it is reported it will reflect a broader attitude toward the anti-trust laws and less strict government supervision, at the same time being designed to prevent monopolies. Also, rather refreshingly, if true, it is reported that labor will be charged with increased responsibility in its dealing with both the government and industry. The character of the responsibility is not known but it is alleged that while it will not be of a financial nature, as has been urged often by industrialists, it will be of real substance.

This idea of greater freedom from the anti-trust laws and laying real responsibility on labor, however, apparently does not fit in with the conceptions of the National Recovery Review Board, headed by Clarence Darrow. This organization which rightly or wrongly is represented as being prepared to come forth with a blast against its own parent, the NRA, appears to be saturated with socialistic ideas. These ideas run counter to any principle that would mean further relaxation of the trust laws and that would hold labor to account were it to violate the law. Unfortunately, it is reported that the board may have a great deal of influence in shaping the future policy of the NRA.



As Buick bodies move into the paint line at the Fisher Body plant in Flint, the operator shown at the left reports to the planning department by means of the telautograph

PRODUCTION LINES

Rumor has it that others are moving along the same line. Perhaps the conjecture stage is already behind us. Incidentally, the first one in the field is learning things about the new body construction that should be of great help in simplifying the production problem for the rest.

Fast Hoisting

Chrysler has recently installed new electric hoists for body handling in the production line, built by Harnischfeger Corporation, Milwaukee, Wis. These hoists pick up bodies on the elevation above the assembly floor, carry them 125 feet and lower them onto the chassis as it moves along the assembly line. The quick handling of bodies by this new equipment is indicated by the following operating figures:

Operation	Time Required
Attaching body	10 seconds
Hoist 3 feet.....	2.8 seconds
Travel 125 feet.....	16.7 seconds
Lower 18 feet to chassis..	5.3 seconds
Detach body	10 seconds
Hoist 18 feet.....	5.3 seconds
Return 125 feet.....	15.5 seconds
Lower 3 feet.....	1.7 seconds

Complete operation...1 min. 7.3 seconds

There is a special device, also to prevent the body from swinging as it is lowered to the chassis for mounting. Automatic regulation of traveling and lowering distances insures maximum efficiency at all times.

Tool Finish

Wm. Sellers experts have given us a very valuable pointer on the importance of fine finish on the cutting edges of tools. Ordinary hand grinding is woefully inadequate where volume production is concerned. You must select the kind of tool grinder that not only will give the correct tool form but will also produce a fine, smooth finish. This is particularly important in machining stainless steels, for example, where there is a decided tendency for the metal to pick-up around any rough spot in

the tool surfaces. Given a fine, smooth finish, chromium plating will develop a superfine surface capable of exceedingly long life.

Better Ride

Federal Coordinator Eastman's report on L.C.L. freight decrees a better ride for inert cargo. In this respect the new deal will deal as well with merchandise as the 1934 passenger car does with its human cargo. To wit, a passage from the Eastman report—"Box cars can be made reasonably serviceable . . . by the installation of non-harmonic springs, improved high-speed brakes and wheels." New equipment should comprehend, "light, shock-proof construction designed for merchandise service."

Frameless

How soon before one or more prominent car builders come out with a frameless design? Talk around the circuit is more persistent than ever concerning an early announcement. One large body builder knows how such a car can be built, using the body as the load-carrying member.

Whither Lines

Backlog of orders for the current airflow cars indicates public acceptance of the first approach to streamline form in automobile bodies.

Coal Gas

The Wallasey Gas Authority, Cheshire, Eng., has decided to install a plant at the gas works for the supply of compressed gas for fuel for internal combustion engines. Gas under a pressure of 3000 lb. per sq. in. will be contained in steel cylinders, weighing 112 lb. each.

The cylinders will be suitably constructed for attachment to motor vehicles, and one of them will contain sufficient gas to cover a 20-mile journey with loaded vehicle. The usual equipment will be in the neighborhood of four cylinders.—From *Industrial Britain*, March.

On Gages

Sheffield is ready to distribute a loose-leaf handbook on gage standards and standard gages made by this company. Data appears on hard board sheets very convenient and durable for the engineering and drafting departments. Among other things the manual includes data sheets on thread standards, conversion tables, as well as a description of the Sheffield electric gage, which should be familiar to readers of *Automotive Industries*. Ask us for a copy of the Sheffield Gage Manual.

—J. G.

MANUFACTURING
MANAGEMENT
METALLURGY

Mechanical Remote Control Broadens Automotive Applications of Radio

by J. C. Smack*

POSITIVE remote control for automotive radio installations has been greatly facilitated by the introduction of the special flexible shaft recently developed by The S. S. White Dental Mfg. Co. Remote control now makes it possible to mount the set in any convenient location and since flexible shafting up to 30 ft. in length has been successfully used, the automotive applications are being widened to include aircraft, taxicabs, and marine units.

The S. S. White special flexible shaft has been designed to meet two requirements—no backlash when it is turned in either direction; and uniformly smooth action. To this end, its torsional deflection is held to 0.35 deg. per ft. per ounce-in. torque when rotated in either direction.

Fig. 1 shows the comparison between the conventional shaft for power drives such as the speedometer (top) and the special remote control shaft (below). The conventional construction for transmitting power in one direction has four layers of wire with four wires to the layer, making a total of 17 wires including the mandrel. The remote control shafting (No. 150L53) is of different construction in order to obtain the least amount of torsional deflection and equal deflection in either direction of rotation.

This shaft has a total of 43 wires comprising the mandrel, the first layer of four wires, second layer of six, third layer of nine, fourth layer of twelve, and fifth layer of eleven wires. This construction combined with other features of design gives substantially equal low deflection in either direction

*The S. S. White, Dental Mfg. Co., Industrial Division.

of rotation, whereas the conventional power shaft has greatly increased deflection in the "unwinding" direction particularly.



Radio control designed by Packard for use in sedan-limousine rear compartment installations

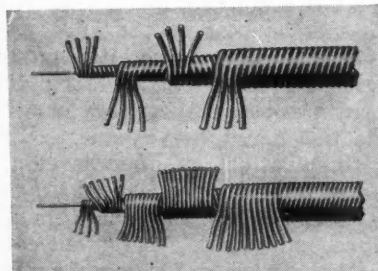


Fig. 1—Comparison between conventional shaft for power drives (top) and the new remote control shaft designed for radio installations

Some standardized forms of the No. 150L43 shafting and casing (protected by S. S. White patents) are given in Fig. 2. The standard method of finishing shafts, square swaged ends, is shown at A. It is recommended as the correct method of securing preparatory to cutting to length. Octagonal swaged ends, B, are recommended when the shaft is to be held by a set screw. The eight-sided form makes possible the easy calibration of control unit and condenser. Where field installations are to be made or for unusual jobs, shafting with intermediate swedges, C, located at one or more points along the shaft can be supplied.

Casings shown at D and E were specially developed for radio installations. D is a rugged metallic casing just a little over $\frac{1}{4}$ in. diameter, with a rust-resistant finish. Another type with enlarged ends, E, permits attaching to the shaft large end fittings up to $\frac{3}{8}$ in. diameter.

In general the remote control unit for automotive applications is found to consist of the following three elements: remote tuning dial usually of the geared vernier type; flexible shaft and casing combination; gear unit of proper ratio.

Most current radio installations use the 150L53 shaft with the 170A1 casing described above. Perhaps the most important qualification to be observed in working out the job is to keep the radius of bends not less than 4 in. and greater if possible.

For long controls as on aircraft or marine installations where still greater torsional rigidity is required, either special shafting of larger diameter can be supplied or increased gear ratio can be introduced.

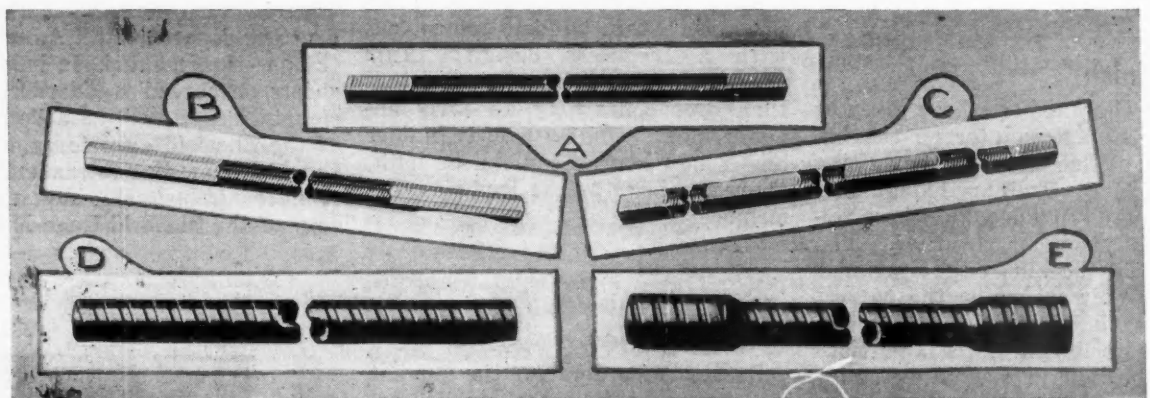


Fig. 2—Standardized forms of remote control shafts and casings. Casing E, with enlarged ends permits the use of shaft end fittings up to $\frac{3}{8}$ in. diameter

Fig. 1—Developing right and left hand rear seat arm rests in one operation

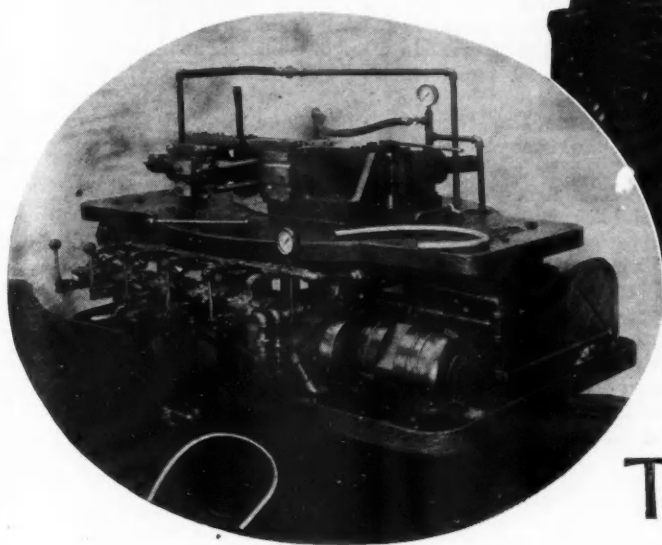


Fig. 2—Finishing the U-bend in front seat back frame and robe rail member



Tubular Seat Frames Made on High Speed Bending Machinery

HIGH-SPEED tube-bending machinery for universal or special set-ups is offered by Williams, White & Co., Moline, Ill., for the production of tubular seat frames and seat parts for passenger car interiors.

All types are fitted with two motor-driven hydraulic pumps. Each pump line has an adjustable pressure relief valve, one to set for the pressure required to clamp the tubing and the other to set for the pressure required to swing the wiping die cylinders. Oil tank, pumps, motor, piping and valves are located in an oil pan which is mounted high enough to provide foot room beneath it for the operator and to permit sweeping under the machine.

In bending to short radii, rods with balls on the ends are attached to swinging arms so that before making the bend the operator—after clamping the tube—inserts the balls in the tubes and hooks the ball rods in notches in the ball puller. As the swinging arm to which the wiping die cylinder is attached moves around the stationary die, the balls are pulled just back of the center line, ironing out the tubes to full diameter should they have flattened on account of the short bend.

The machines are equipped with flexible dies (patents applied for) which follow the grooves in the stationary die. These are especially necessary in making automobile arm rests and frames for modernistic furniture where the bending does not always lie in one plane. Where right and left-hand parts are needed, one pair is formed at a time.

Fig. 1 shows the Type C machine which develops at one cycle right-hand and left-hand rear seat arm rest supports for automobiles. The first valve at the left clamps two pieces of stock. The second valve operates the swing-

ing arm carrying the first bending die cylinder and forming about half of the bend. An air valve controls a cylinder which holds the second swinging arm raised out of the way to carry the above movement under it. The first bending cylinder is then backed away and the dies clamped on the work, whereupon the third valve lowers the second wiping die cylinder to the position shown in the photograph. The fourth valve clamps the work between

the wiping dies on the second cylinder and the stationary die, and the fifth valve swings this cylinder about the stationary die to complete the bend. This machine makes 60 to 80 pairs of arm rests per hour.

In the Type D machine which forms at one cycle right and left hand front seat arm rest supports, first operation, the movements and operations are practically the same as Type C except that the stationary die is collapsible—hy-



Fig. 3—Completing the closed frame for the front seat back, using the U-form from operation in Fig. 2

draulically operated — to permit removal of the finished piece from the stationary die. Attention is called to grooves in the stationary die, showing that the bends are not in one plane. This machine forms 55 pairs of arm rests, first operation, per hour.

Another unit in the set up is the Type E machine for finishing front seat arm rests and forming support for foot rest at the back of the front seat frame. After Type D machine makes the first bends in these parts they are transferred to this machine and the right-hand arm rest is placed in right-hand dies and the left-hand in the left-hand dies. The first valve at the left clamps the material and wiper dies. The second valve moves the swinging arm carrying the wiper dies right and left and returns them as shown. The first pair of ball rods is removed and

shorter ball rods are inserted for the final operation. The third valve now operates to clamp the vertical rocking cylinder dies while the fourth valve rocks the two vertical cylinders and dies to complete the foot rest support. This machine finishes 70 to 90 pairs per hour.

Fig. 2 shows a Type A machine for finishing front automobile seat back frame and robe rail. Stock is inserted at rear of machine. The first valve clamps the stock and back wiper dies and the second valve operates both rear swing arms, bringing the back wiper dies around to form a "U" shape. Then the front end of the stock is pushed down into the front dies where the third valve clamps the stock while the fourth valve is operated to carry the two front cylinders toward the operator, forming the curve on each

side. The fifth valve swings the back bending die for unloading. This machine forms 75 to 90 parts per hour.

The machine for making coach front seat back frame and robe rail is shown in Fig. 3. The right-hand side forms the "U". It is then transferred to the left side and finished. Both these operations take place at the same time, forming a complete piece at one cycle of the machine. This machine forms 60 to 70 pieces per hour.

A machine for kinking the corners of front seat frames for both sedan and coach seats to form the robe rail also has been developed. Two outer cylinders are used for sedan robe rails, while the center and right-hand cylinders only are used for coach seat robe rails. This machine forms 120 to 150 pairs per hour.

NEW DEVELOPMENTS

For Diversified, Short-Run Milling

Carboloy Company, Inc., Detroit, Mich., has announced a general purpose Carboloy-tipped face-milling cutter for universal use on cast iron, non-ferrous and non-metallic materials.

In announcing this general-purpose cutter, Carboloy points out that it is not intended to replace special cutters

suits without the sensational increases in speeds, etc., which are common to Carboloy milling on large, quantity-production jobs.

Gear Tester Is Universal

George Scherr Co., New York, N. Y., has added a line of Parkson universal gear testers designed for quick inspection of a variety of spur, spiral, bevel and worm gears. Specifically the tester will show the combined rather than individual errors and consequently will tell quickly whether the mating pair is properly matched. The tester is available in a range of three sizes and may be used with a dial indicator for a visible check at the gear cutting machine or it may be equipped with a recorder for automatic inspection on a production line.

In operation, gears are tested in pairs with one preferably a known master

This photograph shows the new Silent Tread tire of the General Tire & Rubber Company, Akron, which is claimed to combine the silence of the ribbed tread with the anti-skid properties of the knobbed tread tire

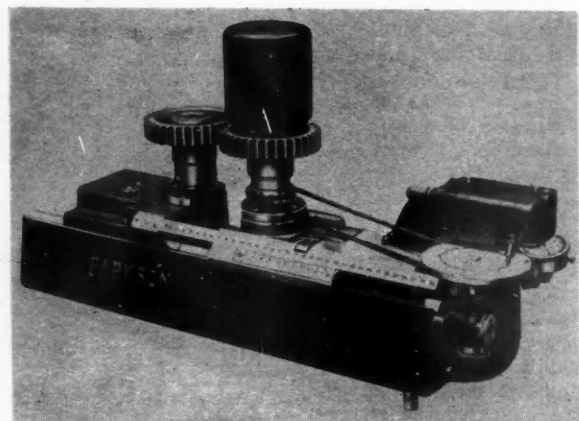


on large, quantity-production jobs, as on this type of work the most efficient results are obtained with cutters especially designed for maximum performance.

The field of economical use of the general-purpose cutter is instead to be found on general milling work—short-run, highly diversified milling on many different kinds of materials. To make the general-purpose cutter practical for this type of work, modified designs are employed to produce economical re-

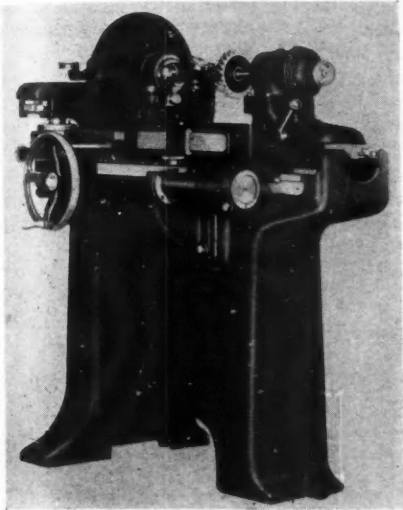
gear. The center distance can be accurately adjusted and the gears then rotated to judge the mating action. The indicator shows the effect of incorrect tooth thickness or error in profile. When a pair of gears is locked in position at the correct center distance, there should be no dial movement in a perfectly matched pair.

Various fixtures are available to handle special forms of gearing or to provide special measurements.



Checks Lead and Machine Setting

The Lees-Bradner Co., Cleveland, Ohio, has brought out an inspection machine for accurately measuring the lead of helical gears. The machine operates on the principle that a point of contact with the gear tooth is moved across the gear face and at a uniform distance from gear axis while imparting to the gear being tested an angular or rotative motion equal in extent to exactly one complete revolution



while the contact point is moved through the exact distance of the lead.

In operation the tooth contactor is adjusted into position with one of the gear teeth. The indicator carriage is traversed parallel to the gear axis by means of handwheel at front of machine. As the indicator carriage is traversed carrying with it the angularly adjusted straight-edge, the transverse cross slide carried by headstock is caused to move at right angles to work spindle. This movement causes roller mounted on cross slide and in engagement with involute cam to rotate spindle and gear being tested.

Any deviation from true lead of gear is registered directly on the direct reading indicator in ten thousandths of an inch.

Horizontal Bandsaw

The Wells Mfg. Co., Three Rivers, Mich., has just brought out a portable bandsaw operating horizontally like a hack saw. It has a built-in motor drive and can be attached to any power source in the shop. The machine is said to be of great utility for maintenance, and general metal cutting in stock rooms and tool cribs.

The Wells saw is made in two sizes, 4 in. and 8 in. It is said to cut metal within a variation of less than 0.005 in. in thickness and on a recent test cut 1½ in. C. R. machine steel in 47 seconds.

NEW DEVELOPMENTS

Automotive Parts, Accessories and Production Tools

Pantograph-Type Gas Cutting Machines

The Air Reduction Sales Company, New York, N. Y., has added to its line of Pantograph-type gas cutting machines two new units, designated as the Airco-DB No. 7 Oxygraph and the Airco-DB No. 1 Travograph respectively, which greatly enlarge the range and scope of machine gas cutting.

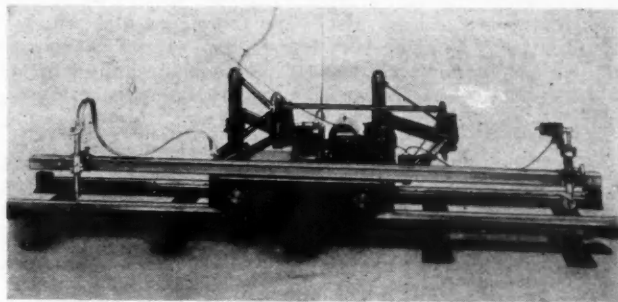
The basic principle of operation of these two machines is the same as that of the Airco-DB No. 6 Oxygraph, previously introduced.

However, the No. 7 Oxygraph employs a different pantograph construction, the fourth side of the parallelogram being removed to the rear. This arrangement allows the working ends

end of one pantograph arm and the cutting torch to the end of the other arm. It is designed for single torch operation only. In this machine the tracing table for holding the full-scale drawing is part of the machine and is located on top of the bed between the vertical posts.

In the case of the No. 1 Travograph, illustrated, the pantograph assembly is mounted on a carrier that travels on rails. This feature accounts for its greatly extended cutting area as compared with the No. 6 Oxygraph.

It is fitted with a long tracer bar, attached to the outer ends of the pantograph arms. The tracer mechanism and cutting torch holders are mounted on this bar and may be moved to any position along the bar and secured in place by set screws. As many as six



of the arms to swing between the vertical posts which support the pantograph assembly, as well as in back of them, and permits the covering of a maximum cutting area with a given length of arms.

The No. 7 Oxygraph has no tracer bar, the tracer being attached to the

cutting torches may be mounted on the bar for multiple cutting.

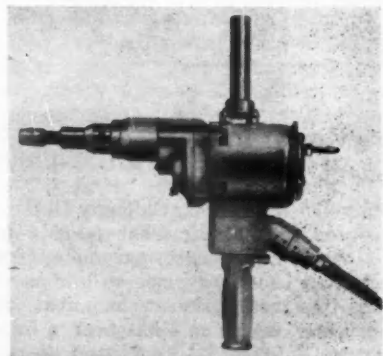
The No. 1 Travograph can also be operated with either manually controlled or magnetic tracer. The cams used with the magnetic tracer are mounted on the tracing table of this machine.

New "Shockless" Nut Runner

A "shockless" high frequency electric Nut Runner, with an adjustable releasing clutch, which tightens the nut without shock to the operator, is being introduced by The Buckeye Portable Tool Co., Dayton, Ohio.

This clutch operates on a new principle having an adjustable releasing cam which trips open the clutch when the nut is tight.

The tool is made in a number of sizes, the specifications for the No. 30-N, illustrated are: 3 phase, 180 cycles, 225 volts. Speed 750 r.p.m.



Capacity—5/16 in. and light ¾ in. nuts. Length—14 in. Weight 16½ lbs.

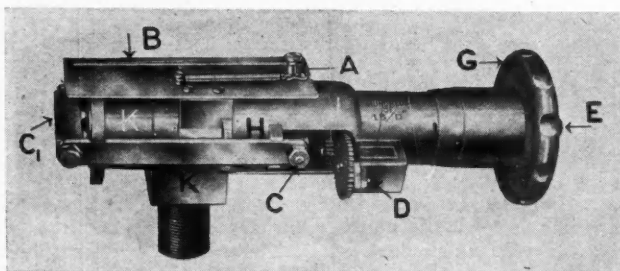
NEW DEVELOPMENTS

Automotive Parts, Accessories and Production Tools

Okill Indicator Measures Fuel Injection Pressures

George Taylor (Brass Founders), Ltd., Bolton, England, manufacturers of the Okill gage, have developed and are marketing the Okill super-pressure indicator for measuring the fuel-injection pressure in airless-injection oil engines. The principle is the same as that of the Okill pressure gage or indicator. In the latter the pressure to be measured acts on a piston which is under known spring pressure that normally holds a flange on the piston against a seat. When fluid pressure and spring pressure balance each other, the flange is moved slightly from its seat and causes an indicator hand to move.

With pressures above 2000 lb. per sq. in. the piston diameter would either have to be made very small or else the spring would have to be made very stiff, both of which alternatives are open to certain practical objections.



For this reason, in the super-pressure indicator, instead of using a single piston, two opposed pistons or plungers are used, of slightly different diameters. The pressure exerted by the fluid is proportional to the difference in the areas of the heads of these two pistons.

Referring to the illustration, when oil under pressure is admitted to the indicator cylinder *K*, the larger piston is forced against the crosshead *C* and the smaller piston against the crosshead *C₁*, so that the side rods which connect the pistons are in tension. If the spring pressure, which acts on the crosshead *C* through a piston rod, is less than the oil pressure in the cylinder, the frame will move to the right until crosshead *C₁* is in contact with the end of indicator cylinder *K*.

By rotating the handwheel *G* in the clockwise direction, the spring contained in sleeve *J* is compressed, and this is continued until crosshead *C* is and remains in contact with the right-hand end of cylinder *K*. This position can be ascertained by observing the position of the indicator finger, which magnifies the travel of the pistons and the frame against which they abut.

If the spring is released until the finger vibrates slightly, it shows that pressure balance between the fuel oil

and the spring has not been reached completely, and the finger will continue to vibrate with each stroke of the injection pump. The spring is then compressed until the finger just ceases to vibrate. This indicates that a balance has been established and the pressure is then read off on the counter.

Low Resistance Low Cost

Russell Electric Co., Chicago, Ill., has succeeded in making what is said to be a rugged, accurate pyrometer for production use, at a price so low as to make its installation economical in most places where cost has been a barrier.

The Hold-Heat pyrometer differs from customary designs in that it has

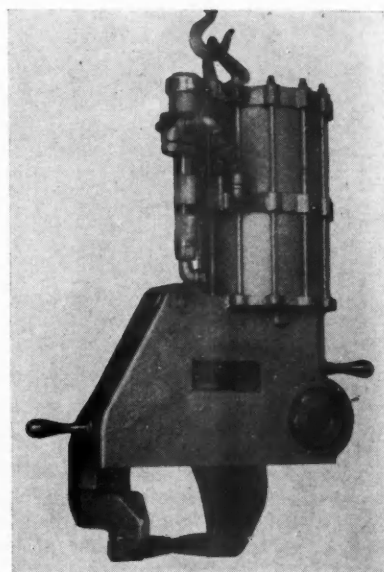
a total resistance of only ten ohms, compared with 300-900 ohms. It also employs very heavy gage thermocouples said to result in a negligible total variable resistance.

These meters are mounted in a hexagonal aluminum case and installed some distance from the point at which the temperature is to be measured. They are of direct reading type and have manual cold and correction adjustment.

Alligator Type Riveter Has 2 In. Stroke

A light, compact squeeze riveter of the "Alligator" type has been developed by the Hanna Engineering Works, Chicago, Ill.

The mechanism is entirely enclosed and consists of a roller and toggle which transmit the power movement of the cylinder piston unit to the moving die in such a manner that the latter is closed upon the rivet with a minimum power consumption and yet exerts



a known and predetermined pressure on the dies regardless of considerable variation in length and thickness of rivet. The riveter shown develops 20 tons between the dies which is sufficient for heading $\frac{3}{8}$ in. diameter cold and $\frac{1}{2}$ in. diameter hot rivets. The die stroke is 2 in. Both jaws of the Alligator type riveter can be entered into a pocket or pockets to head a rivet which could not be reached by any other type of riveter. Considerable variation in the reach and shape of these jaws is possible.

Condenser Without Cotton or Waste

The DeVilbiss Company, Toledo, Ohio, has announced an improved heavy duty condenser, Type HP-504, which is said to effectively remove oil and water from the air by an internal baffle arrangement. No cotton or other waste is employed in this filter.

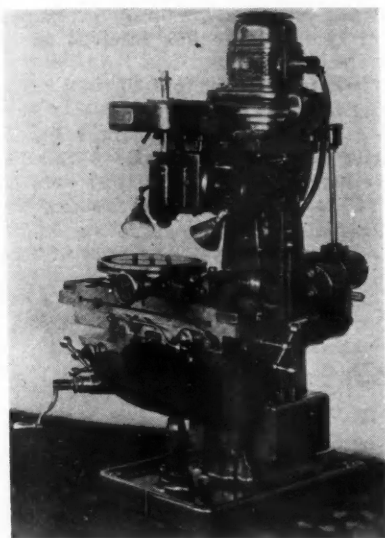
The condenser is built of black iron pipe and fittings with inlet and outlet openings conveniently located in the top cover. Air passes down through a pipe to the condensing chamber, at which point special construction fea-

tures cause precipitation of moisture and oil to the bottom of the condenser where it may be drained.

Vertical Milling and Die Sinking Machine

Reed-Prentice Corp., Worcester, Mass., has just brought out the 3V vertical milling and die sinking machine with vertical motor drive. The motor bracket is adjustable for proper belt tension and changes in spindle speeds through screw operated by hand wheel.

Drive is through endless V-belt and 4-step spindle and motor pulleys providing 10 spindle speeds. Either 1800 or 1200 r.p.m. motors may be used. With 1800 r.p.m. motor speeds of 600-740-910-1125-1415-1660-2100-2540-3260 and 4000 are available; with 1200 r.p.m. motor speeds of 395-485-600-740-930-1090-1380-1670-2150 and 2630 are provided. Where slower speeds are re-



quired 900 r.p.m. motor may be used.

Pulleys are balanced for high spindle speeds and are of heat treated aluminum alloy, combining lightness and strength and reducing inertia when stopping. Spindle pulley is guarded.

Feed is taken direct from motor through helical gears and vertical shaft to gear box. Six feeds are available for each spindle speed with maximum and minimum longitudinal feed of .047-.0004 in. per revolution. Longitudinal feeds per minute with 1800 r.p.m. motor are 1.75 in. to 28 in.; with 1200 r.p.m. motor 1.15 in. to 18½ in.

The working surface of the machine table is 10¼ x 30¾ in.

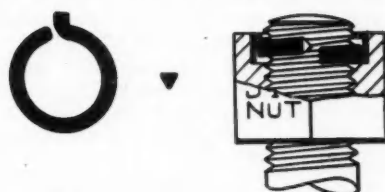
New Self-Tightening Safety Nut

The illustrations herewith show the Hall self-tightening nut which is of

NEW DEVELOPMENTS

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very simple construction and is said to have proven itself unusually reliable on machines subjected to extreme vibration. The nut is counter-bored at the upper end and a steel wire spring of triangular section is inserted in the counter bore, one end of the spring being bent outward at right angles and engaging in a slot in a retainer which



Hall self-tightening safety nut and its "brake band"

is made a fairly tight fit in the counter-bore. The spring wire has such a section that it fits the thread snugly, and the spring is so formed that it hugs the threaded bolt. When the nut is turned in the right-hand direction, it tends to open up the spring, causing it to release its hold on the threaded portion of the bolt, so that the nut can be screwed home without special effort. When it is attempted to unscrew the nut, the spring contracts and grips the thread on the bolt tightly. It is claimed that any jarring of the parts fastened together by the bolt actually tightens the nut, instead of loosening it.

The patents on this lock nut (which is not yet in regular production) are controlled by the Safety Nut Corporation, Land Title Building, Philadelphia.

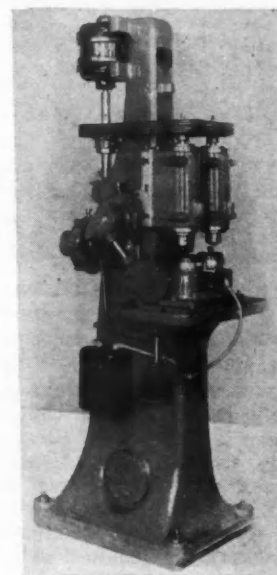
A New Design Profile-Milling Machine

An adaptation of a standard machine tool to a special single purpose job is illustrated in the machine just introduced by the Automatic Machine Company of Bridgeport, Conn. The operation required the cutting of elongated grooves, tapered in width and depth, in chrome molybdenum clutch discs. It was a condition that the grooves must be exactly duplicated in pairs, and right and left hand to match. One machine was required to cut four and another machine to cut six grooves in each disc. The cutters were high speed die cutters of the fish tail type running 2400 r.p.m., held in precision collet chucks, with the up and down location adjustable by means of a finely

threaded screw running through to the top of the spindle.

The holding fixture for each pair of discs is illustrated. With the nut loosened, the disc is slipped over the stud, the U-clamp washer slipped on and the nut tightened on the stud. The work holding spindles run right and left hand and are driven by a worm shaft and gears. The stopping of the work operation at the end of the last cut is controlled by the limit switch actuated by the knob on the left hand holding spindle.

As to the machine, the 2 hp. precision



balanced motor at the top rear of the column drives the vertical power shaft on which the V-belt drive pulley for the spindles is mounted. The motor runs continually and is controlled by a start and stop push button station on the right hand side.

With the motor running, the work is placed in the fixture and the "Start" button pressed. This releases the solenoid which permits the clutch to engage and drive the cam shaft and work spindles. At the completion of one revolution, the limit switch is engaged by the knob on the left hand work spindle which operates the solenoid, disengaging the clutch and stopping the work operations.

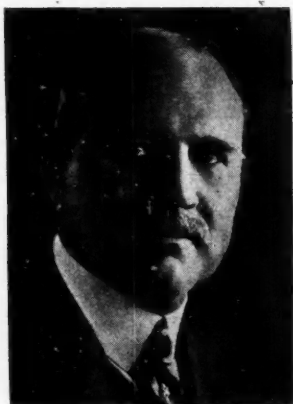
Production is 60 pairs or 120 discs grooved per hour. The design is readily adaptable to any work of a similar nature. The machine occupies a floor space of 24 in. x 34 in. and weighs 1750 pounds.

LaFayette in New Price Field with \$595 Model

Deluxe Series Continued Without Change in Prices

KENOSHA—Nash jumped into the thick of the battle for the lowest-priced market this week with an announcement of a new standard LaFayette line consisting of a two-door sedan at \$595 and a four-door, four-window sedan at \$645. The price on the two-door job compares with \$535 on the Ford, \$570 on the Plymouth and \$615 on the Chevrolet.

The new line is in addition to a deluxe LaFayette series which carries the prices announced at the New York Show. At the same time, dealers were informed that there would be no in-



C. W. Nash

crease in prices on Nash models if it possibly could be avoided.

The new standard and deluxe models differ only in finish and equipment. The former is built only with conventional axle, and is furnished only with black lamps and fenders and in but three standard colors, viz.: blue, black and dark green. The deluxe series may be had with the articulated axle type of independent suspension at no extra cost if desired. It is furnished regularly with chrome plated lamps and windshield wings, and is offered in optional colors.

Discounts on the standard series are unchanged, but the deluxe discounts have been increased several per cent. Dealers are being rebated to the new price and discount basis on all cars in stock, including demonstrators.

Nash in Production as Strikers Return

KENOSHA—Nash plants here and in Racine and the subsidiary Seaman Body Corp. in Milwaukee, have resumed operations following the settlement of the protracted strike which halted production some weeks ago.

The strikers returned following a vote at the Seaman plant on Tuesday which resulted in a 794 to 224 decision

to accept the terms of the proposed settlement. Workers at the Kenosha and Racine plants had previously voted to go back to work, but an adverse vote at the Seaman plant on Saturday had blocked resumption of operations.

The terms of the settlement were in accordance with the proposals made by the Automobile Labor Board earlier this month, according to H. H. Seaman, president of Seaman Body. In addition, he said that the settlement provides that all strikers together with about 200 men laid off in January are to be returned to work within a few days. After these men are at work, the company will hire whomsoever it pleases. In previous proposals, the company had suggested returning men to work by departments, but under the arrangement accepted, work will be resumed in all departments simultaneously. This will mean that some departments will work shorter hours than others until balanced production is attained.

The settlement was heralded as a great victory by spokesmen for the strikers. They asserted that collective bargaining machinery has been firmly established, and that they had won recognition of seniority rights and preference for union men in reemployment. In addition, they stated the workers had been accorded a minimum rate of 50 cents per hour and a 10 per cent wage increase.

N.L.B.'s Order Clashes With Settlement Rules

Order in USL Case Holds Union Membership Lists Need Not Be Disclosed

WASHINGTON—The principles laid down by the President in the recent automotive settlement apparently have little weight with the National Labor Board. In an order issued April 13 involving the USL Battery Corp. the NLB ruled that workers' representatives selected in a secret poll under the supervision of the Regional Labor Board need not disclose the names of those whom they represent.

By implication, at least, the President's settlement indicated that he felt that employers have the right to an answer to the question "Whom do you represent?" before recognizing persons claiming to represent employees. In the USL order, which directs that an election be held under the auspices of the Buffalo Regional Board, however, NLB insisted that "Representatives of the employees need not disclose the names of those whom they represent. Where their authority is questioned, a secret poll under the supervision of a Regional Labor Board can set all doubts at rest." Referring to an election sponsored by the Buffalo Board on Feb. 18, the order continued "The company was therefore not justified in requiring the disclosure of the names of

(Turn to page 506, please)

Chrysler Dealers Now Get Freight Discount

All Divisions Adopted New Billing Basis Under Which Transportation Is Prepaid

DETROIT—A new method of billing cars to dealers has been adopted on all Chrysler Corp. cars which *Automotive Industries* estimates will represent an increase in gross profit to the dealer averaging nationally 1½ to 2 per cent on delivered prices. The additional gross revenue to the dealer is not reflected in delivered prices, the cost being borne by the factory. The corporation is sending out to dealers suggested delivered prices on new cars including accessories as a further move toward price stabilization.

Under the new method, cars are billed to the dealer at a "list" price which consists of the advertised F.O.B. Detroit price and transportation charges to destination. This billed "list" is the base to which the dealer discount is applied in determining the net price. As a result, the dealer now gets the same margin on his investment in freight that he has received on the car itself.

There is no doubt that the new billing plan will be welcomed enthusiastically by dealers, particularly those on the Pacific Coast, as the industry's retailers have long contended that they were entitled to a markup on freight, and some rather strong arguments can be marshalled to prove the justice of their contention.

Roos to Visit Sections

NEW YORK—D. G. Roos, president of the Society of Automotive Engineers and chief engineer, Studebaker Corp., South Bend, Ind., will shortly begin a program of visits to S.A.E. Sections in various parts of the country. He will be accompanied by John A. C. Warner, secretary and general manager of the Society.

"What's Going on in Automotive



D. G. Roos

Engineering?" will be the subject of Mr. Roos's message to the Sections. Mr. Warner will talk on "Quick Glimpses at S.A.E. Achievement."

Included among Section visits on the first part of the trip will be the following:

April 30—S.A.E. Club of Denver, Colo.

May 3—Southern California Section (Los Angeles).

May 7—Northern California Section (San Francisco).

May 9—Oregon Section (Portland).

May 11—Northwest Section (Seattle).

Scott's Resignation Ends Reo Proxy Fight

R. E. Olds Wins Control With Little Opposition; D. E. Bates New President

LANSING—The expected battle of proxies for control of the Reo Motor Company flickered out when it was announced Richard H. Scott, president and former general manager, had resigned and turned his votes over to Mr. Olds.

The independent faction made no fight at the annual stockholders' meeting. R. P. Koenig, New York attorney who was leading the opposition group in conjunction with Mr. Scott, announced they had lost their "ace trump" when the Scott votes went to the faction headed by R. E. Olds. No opposition developed when voting on the slates began.

In a statement announcing his resignation and delivery of his votes to Mr. Olds' faction Mr. Scott said: "I regret (Turn to page 506, please)

April Retail Car and Truck Deliveries Soar to Highest Levels Since May, 1931

by Athel F. Denham,

Detroit Editor, Automotive Industries

DETROIT—Domestic retail deliveries of new cars and trucks are currently running at a rate which should bring the total for April to close to 275,000 units, the largest single month's volume since May, 1931, and approximately equal to sales in April, 1933 and 1934, combined.

While a few companies are still quite short of field stocks of cars, the present high rate of production will enable most major producers to build up inventories before the end of the month that will permit reducing some of the pressure on manufacturing organizations.

It now appears probable that an April output of close to 400,000 units will represent the production peak for the year, particularly in view of the fact the operations are expected to begin tapering off sooner than usual due to expected earlier announcement of new models.

New U. S. Indexes Show Dollar Trend of Car Sales

WASHINGTON—Month - to - month changes in the value of domestic passenger car sales are reflected in new indexes which the Department of Commerce published for the first time this week. The indexes go back through 1929, and are presented both with and without seasonal adjustment, as the accompanying chart shows.

The method employed in computing them parallels closely the plan devel-

oped by *Automotive Industries* in connection with the estimates of the value of retail car sales which it has published monthly for about a year. The chief difference lies in the fact that the AI estimates are based entirely on registration data, while the Department's indexes are developed both from registration data and from sales reports submitted to the N.A.C.C. by the factories.

In its calculations, *Automotive Industries* multiplies the number of cars of each model registered by the price of the standard four-door sedan, and adds the results of these multiplications to get the total dollar volume for all makes. The Department follows the same procedure, except that in the case of two cars it used the coach price. Having obtained the dollar value of registrations, it divides by the number of registrations to get the average sales price. This average sales price is then multiplied by the number of sales reported by the N.A.C.C.

The correlation between the two methods obviously depends on how closely the total of registrations duplicates N.A.C.C. sales reports. The advantage of measuring sales in dollars, of course, lies in the fact that it compensates to some extent for shifts in the split-up of the market among the various price groups, which a direct comparison of unit sales naturally does not reveal.

March Sales Gain 140 Per Cent Over Last Year

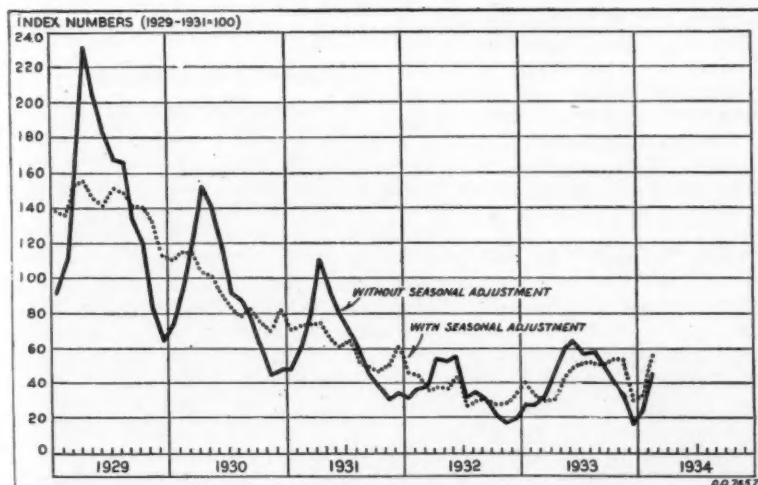
PHILADELPHIA—According to revised estimates based on returns from 19 states, new passenger car registrations for March amounted to 179,000, as compared with 78,741 a year ago and approximately 93,000 during February, 1934. On this basis March will show a substantial increase over March, 1933, of approximately 127 per cent and over February of this year of about 92 per cent.

Registrations of both new cars and trucks in March are estimated at 213,000, a gain of 140 per cent over the 88,641 registered last year in the same month.

The partial returns make Chevrolet the best seller with an estimated 54,800 units, Ford will be second with 44,600, and Plymouth will stay in third place with approximately 31,000 units. While these three makes all record a very substantial gain over March, 1933, Plymouth shows the greatest gain with about 212 per cent, Ford is second with an indicated increase of 183 per cent, and Chevrolet is third with approxi-

(Turn to page 506, please)

New Index of Monthly Value of Car Sales



Compiled by the Department of Commerce, this new index reflects monthly changes in the retail dollar value of U. S. car sales

Carl Breer Favors Engine in Front

Holds Rear Engine Design Does Not Give as Favorable Distribution of Car Weight

DETROIT—In an article in *Chrysler Salescraft*, Carl Breer, executive engineer of the Chrysler Corporation, discusses the pros and cons of rear mounting of automobile powerplants. He admits that since this would move the mass of the engine further from the center of gravity, the frequency of oscillation (pitching frequency) would be reduced, as compared with a conventional car, which would improve riding comfort. However, this same end can be achieved by moving the powerplant farther forward, over the front axle, and an analysis of the incidental effects of the two alternate methods showed a forward shift of the powerplant to be preferable.

If the engine were located at the rear, back of the rear axle, the weight on the front springs would be reduced, and in order not to increase the rate of vibration of the forward end of the car, these springs would have to be made much weaker, which would introduce serious problems in regard to front-end stability.

It has been claimed that the rear-engined car has less tendency to side-slip the front wheels when entering a turn, but analysis shows this argument to be a fallacy. While it is true that in a rear-engined car the engine mass is closer to the turning axis, which reduces the resistance to turning, it is also true that the adherence between front wheels and ground is reduced in a greater proportion than the resistance to turning, hence the rear-engined car skids the front wheels more readily than the conventional type.

Another disadvantage of the rear-engined car pointed out by Mr. Breer is that in a side wind the center of wind pressure is likely to be ahead of the center of gravity of the car, which tends to force it off its course. This is readily understood by comparison with an arrow, which would certainly not follow a straight course if most of its weight were at the rear.

Another consideration is that the hazards to the occupants are increased when they have the powerplant behind them. This was emphasized in the aeronautic field by the abandonment of the pusher type of plane.

Hayes Corp. Balance Sheet

GRAND RAPIDS—The Hayes Body Corporation balance sheet as of Dec. 31, 1933, showed current assets including \$12,467, cash; accounts receivable, \$84,451; inventories (physical inventories at lower cost or market), \$113,016; cash in closed banks, \$450, and deferred charges of \$15,759. Current liabilities totaling \$197,523, included notes payable, \$52,244; accounts payable, \$118,100, and accrued accounts, \$27,179.



First New Willys 77 Off Production Line

Domestic and foreign dealers' demands for cars have plants in Toledo running at top-speed. Officials explain that advanced streamlining has been carried to its most practical advantages in the new model and the car is so designed from front to rear as to split air pressure instead of pushing it

Dissenting Employers Criticised by Wagner

Rebukes Those Who Still Put Heavy Obstacles In Labor Board's Path

WASHINGTON—Senator Robert F. Wagner, chairman of the National Labor Board, apparently continues to experience difficulty making his rulings stick, according to a statement he issued in conjunction with the Board's latest report. The Senator rebuked those employers who have not yet fallen into line with the ideas and ideals of the Board.

"A minority of employers," said the Senator, "whose following has not diminished, persist in an attitude which does not make for industrial peace and constitutes a heavy obstacle in the way of the work of the Board."

Observers of the Senator's course in connection with the Board and in the upper house are speculating as to the exact meaning behind the statement. Most are persuaded that Senator Wagner is taking this means of giving a back-handed boost to his moribund Labor Disputes Bill which seems to be taking the shortest distance to political oblivion.

President Roosevelt has not put the Wagner bill off his docket of wanted legislation before Congress adjourns. This fact alone, with the Senate committee's make-up, would insure rejection of the measure. But when the

overwhelming opposition developed by industry against the bill is coupled with Mr. Roosevelt's act, oblivion seems to be its probable fate.

The combined summary of the National Labor Board and the Regional Labor Boards for April 1, and compared with March 1 are shown in the table at the bottom of this page.

Automotive Employment Increases In Michigan

DETROIT—Automobile employment in the State of Michigan during March reached a total of 275,777 compared with 240,368 in February and 134,095 in March, 1933, according to a report compiled by the State Department of Labor and Industry.

Aggregate weekly payrolls were \$7,339,006 for March, \$6,181,678 in February and \$2,242,711 in March, 1933. Average weekly earnings per capita were \$26.61 in March, \$25.72 in February and \$16.72 in March last year.

Chrysler Stockholders Consider Bonuses, Etc.

DETROIT—Additional bonus, profit-sharing and investment plans were scheduled for consideration by Chrysler stockholders at a meeting this week. Included in the discussions were plans in which officers and employees who also are directors may participate. Consideration also was given agreements for compensation and otherwise made with directors or officers or employees.

Combined Summary—National Labor Board and Regional Labor Boards

	Total Cases	Workers Involved	Cases Settled	Cases Pending
Mar. 1.....	2,012	1,061,646	1,377	531
Apr. 1.....	2,643	1,375,253	1,899	717
Regional Labor Board's Strike Cases				
Strikes	Workers	Strikes Settled	Workers	Strikes Averted
Mar. 1—542	226,479	422	193,913	270
Apr. 1—734	380,587	610	287,436	333
				Workers
				176,989
				251,856

Cummins Enters Two Supercharged Diesels

One Four-Cycle, Other Two-Cycle Engine Will Compete at Indianapolis

COLUMBUS, IND.—Two supercharged diesel-engined racers have been entered by the Cummins Engine Company in the coming Indianapolis Race. Both engines are typical of Cummins construction except that one will be four-cycle, the other two-cycle. The four-cycle engine is 4-cyl. 4 $\frac{1}{2}$ -in. bore by 4 $\frac{1}{2}$ -in. stroke; the two-cycle job has the same dimensions. The engines will turn up around 2500 rpm., which is a fairly high order of speed for a diesel, and will develop about 135 hp. for a displacement of 364 cu. in.

The chasses will be identical in all respects with a wheelbase of 103 in. and standard tread. Total weight is expected to be between 2500 and 2800 lb. or about 500 to 700 lb. lighter than the Cummins diesel entered in the race two years ago.

The supercharger is a Root type blower mounted directly on the front end of the crankshaft and is housed in a streamlined nose; the blower on the two-cycle engine is run at a higher speed, air entering through a series of ports at the bottom of the cylinder liner.

Outward appearance of the engines will be identical, the unusual feature of the design being that the two-cycle job uses about 95 per cent of the parts made for the four-cycle engine. For the two-cycle job the conversion of standard parts is accomplished by running the camshaft at the usual speed but with two cams instead of one, converting each intake valve into an exhaust valve, thus providing two exhaust valves per cylinder.

The performance of these diesel engines will be of greatest interest to

engineers and the public since the race is expected to demonstrate the general dependability of the diesel power plant as well as its remarkable fuel economy. The latter factor alone may place the Cummins entries well up among the leaders, under the new rules where the total fuel load is limited to 45 gal., since the diesel should be able to cover the entire circuit without stops for fuel or lubricant.

The race will also provide a practical comparison of the four-cycle and two-cycle principle, thus throwing more light on the relative merits of the two designs.

Henry Ford Celebrates Wedding Date 1 Day Late

DETROIT—The human side of Henry Ford pierced the familiar austerity the other day. Like most of us, Mr. Ford was late—a whole day late—in celebrating his forty-sixth wedding anniversary.

Not that he forgot, explained Mr. Ford; but, well he had made plans to observe the occasion by visiting the Greenfield village school for chapel exercises. He did get home early for dinner. Again an explanation—"I usually do, you know," said Mr. Ford.

J. P. Gormley Appointed Chevrolet Publicity Chief

DETROIT—Edward Hedner, recently with Chevrolet purchasing division, has been appointed assistant advertising manager of Chevrolet. J. P. Gormley, formerly with John Wanamaker, New York, also has been appointed director of publicity in Chevrolet advertising department, a newly created post.

Broad Scale Steel Ordering Continues

Iron & Steel Institute Puts Ingot-Making Rate At 50.3 Per Cent Capacity

NEW YORK—Aside from the artificial stimulus which the recent price changes have given to contracting in the steel market, specifications and shipping orders for flat steels emanating from automotive consumers this week are on a broader scale.

The American Iron & Steel Institute puts the rate of ingot-making capacity in operation this week at 50.3 per cent, as compared with 47.4 per cent a week ago, this being the highest rate since July when it was between 58 and 59 per cent. Finishing mills, it is estimated, are operating at a rate of 70 to 75 per cent in the Mahoning and Shenango valleys and at a slightly more moderate pace in the Cleveland-Lorain district, with Detroit mills working at capacity.

Parts makers are calling for shipments of heavy tonnages of strip steel, both hot and cold rolled, sheets running neck and neck with strip in point of demand for immediate shipment.

As was expected, contracting for all descriptions of steel turned out to be very heavy during the twilight period when commitments at old prices were accepted by mills. The latter are now booked to the fullest extent for all the steel they care to make and ship between now and June 30. Barring unforeseen developments, the weekly rate of operations between now and then will be based on the current needs of buyers and the convenience of the producers, so that whether or not it will be raised to 60 per cent and more will not alter materially the situation during the current quarter.

Contracting for automotive alloy steels has kept pace with that for plain carbon material. The date for higher prices on wire products to become effective has been postponed to April 26.

Pig Iron—Tonnes booked by sales agents for blast furnaces in the last few weeks have been the heaviest in several years for a like period. Iron is moving freely to automotive foundries.

Aluminum—Steady and unchanged. **Copper**—Statistically the market is making a better showing from day to day, stocks at refineries being whittled down. Pending further development of the Code situation, the market, however, is marking time with electrolytic quoted at 8 $\frac{1}{2}$ c., valley. Prices for copper and brass products have been revised on that basis.

Tin—A slightly easier tone has set in, spot straits tin being quoted at the week's opening at 55c.

Lead—Unchanged and firm. **Zinc**—Dull and unchanged.

Guy Blanchard

AKRON—Guy Blanchard, 64, former advertising manager of Miller Rubber Company and editor of sales publications for the B. F. Goodrich Company, died Wednesday, April 11, at his residence in Akron, following a heart attack. He had been in ill health for several months.

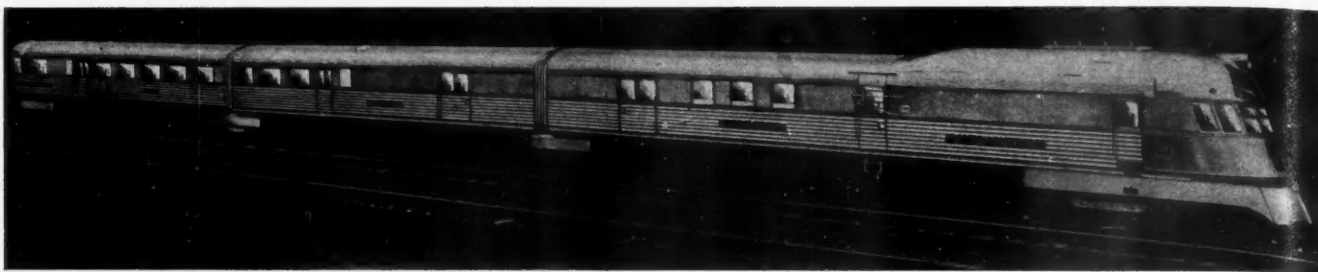
Soviet-Built Tractor and Automobiles



The 100,000th tractor has just chugged off the assembly line of the Stalin-grad plant. An "uradink" (shock worker) piloted the machine through the plant gates



Russian demand for cars is always many jumps ahead of the supply. This line of vehicles is leaving the Ford-Gorky plant. Every car is sold before it leaves factory



Budd-Built "Zephyr" Breezes a Mile in 35 Sec.

Shot-welded stainless steel, three-car train built by E. G. Budd Mfg. Co., delivered this week to the C. B. & Q. Railroad. The Zephyr is 200 ft. long and weighs 100 tons, or a little more than a single conventional Pullman car. The power plant is the new Winton eight-in-line Diesel rated at 660 hp. at

750 r.p.m. governed speed. Fuel economy is of an unusual order, being estimated at 0.38 lb. per bhp., which in terms of train operation amounts to about 2½ miles per gallon of cheap distillate.

During the test run on Tuesday, with editors of *Automotive Industries*

aboard, the train exceeded 100 m.p.h. for several miles, clocked by three stop-watches. The train is of articulated construction with only one truck between two cars, the trucks being equipped with Timken roller bearings. Paul Cret, eminent architect, was consulting designer on interior treatment.

Advance Plan to Lift Franklin Receivership

NEWARK, N. J.—A plan has been advanced by Harry H. Wahl of this city for the lifting of the Franklin Manufacturing Co. receivership. The plan also proposes the entering upon a 1934 production schedule for Franklin cars. Mr. Wahl placed his plan before a committee representing the stockholding interests of the company.

The program includes buying up or compromising creditors' claims; protection of stockholders' interests in re-issue on a basis of new capitalization, with a new balance sheet of \$4,600,000, and production of an \$850 line of air-cooled cars, a truck and a 12-cylinder model.

Federal Trade Commission Accepts Auto-Lite Statement

TOLEDO—The Federal Trade Commission has accepted the registration report of the Electric Auto-Lite Co., bringing a step closer the actual merging of the Moto Meter Gauge and Equipment Co. with Auto-Lite.

The next step is to obtain approval of the New York Stock Exchange to the listing of the added Auto-Lite shares for the converting of the Moto Meter common stock.

Otto Mueller to Direct Murray Research Division

DETROIT—The Murray Corporation of America has organized an engineering and research department at its frame plant in Ecorse, with Otto Mueller, stamping engineer, as its head.

Mr. Mueller, who was educated at technical schools in Furtwangen, Baden, Germany, remained in the ma-

chine and stamping field in that country from 1919 until 1923, when he came to the United States. For two years Mueller was employed in Thomaston, Conn., in technical and designing work, and in 1925 came to Detroit. Mr. Mueller joined The Murray Corporation two years ago, devoting his time chiefly to research and experimental work.

Wilkening Sales Report Shows 44.3% Increase

PHILADELPHIA—Wilkening Manufacturing Co., of this city, announces a 44.3 per cent sales increase for the first quarter of this year compared with the corresponding period in 1933. The increase is nation-wide, and not localized in any one particular sales territory. Neither has it been developed through entering any new field of endeavor.

The pay roll for the quarter just closed was 51.6 per cent greater than during the same three months of 1933.

Chrysler Elects Hartford To Directorate Vacancy

DETROIT—John A. Hartford, president of the Great Atlantic & Pacific Tea Company, was elected to the Chrysler Corporation board of directors at a meeting this week. Mr. Hartford fills the vacancy created by the resignation of Marshall Sampsell.

200 at Tractor Meeting

MILWAUKEE—With an opening day's registration of more than 200 members and guests, the first meeting of recently reorganized S.A.E. Tractor and Industrial Power Equipment Committee got off to a flying start here Wednesday morning.

Industry Formulating Code Financing Plan

Wholesale Authority Gets OK on Temporary Plan for Financing Local Agencies

WASHINGTON—A temporary plan for financing district administrative agencies of the Wholesale Automotive Code was approved Tuesday by NRA Deputy Administrator Ammerman and is being distributed by the Code Authority. The wholesalers are thus the first in the automotive industry to get under way since the issuance of the President's order and supplementary regulations by General Johnson, requiring NRA approval of all code administration budgets and plans of assessment and making non-payment of assessments by a code member a code violation.

The N.A.C.C. is reported to be working on a plan of assessing code administration costs, but its details have not been revealed as yet. It is understood that the A.P.E.M. has not taken any steps in the matter as yet and it may be necessary to effect some revisions in the code itself before they can be. The National Control Committee of the Motor Vehicle Retailing Trade met in St. Louis this week to consider the question.

The wholesalers' plan will be in effect only until budgets can be prepared and their approval secured. It provides for an assessment of 25 cents for each \$1000 of automotive sales in 1933, with a minimum of \$5. The proceeds will be used entirely for local administration during the first six months of the current year. In announcing the plan, the National Code Authority emphasized the importance of maintaining records of receipts and suggested a form for the purpose.

Fate of Security and Labor Bills Uncertain

Wagner to Ask President to Push Passage of His Bills at This Session

WASHINGTON, April 19—Senator Wagner together with Secretary of Labor Perkins and NRA representatives, are scheduled to confer with the President tomorrow in an effort to get Mr. Roosevelt to put the Senator's Labor Disputes and Unemployment Reserve Bills on his preferred list of legislation to be enacted at this session of Congress.

The administration is said to share General Johnson's opposition to several sections of the measure including its proposal to eliminate company unions. The President, however, is reported to be in favor of setting up a permanent labor board as provided in the measure.

Although earlier this week Senator Wagner expressed confidence that his two bills would be enacted at this session, there is considerable doubt that they will be passed in view of the important measures which the President has already scheduled for enactment at this session. These include the Tax, Security Exchange, Bank Deposit and Reciprocal Tariff Bargaining Bills, among others of an equally controversial nature.

During the week Senator Wagner stated that there would be some modifications in his Labor Disputes Bill as it was not intended to act as a positive prohibition against industries assisting their employees in organizing. It was stressed that where such aid was given in a helpful spirit and without limiting the benefits workers might gain through organization, no fault would be found.

In the case of his Unemployment Reserve Bill, the Senator said that the 5 per cent tax on payrolls provided in the original measure would probably be reduced to 2 per cent. It will be recalled that this Bill has been endorsed by the President.

Truckers Hit \$3,000,000 Budget of Trucking Code

WASHINGTON—Vigorous and numerous protests against the proposal of the American Trucking Association to assess \$3 on all "for hire" trucks and 90c. on all "not for hire" trucks when not engaged in moving farm and dairy products were made at an NRA hearing in progress here this week. The inquiry was one of the first to be held since the issuance of the Executive order providing for collections and assessment from code members for administration of codes. The "not for hire" truckers, many of whose vehicles are used in other coded industries were joined by others, in insisting the national code authority for the trucking industry did not have the right to include them in the proposed assessment. Strong objections came from

department store, grocery, confectionery, coal, lumber, bottling, baking, and other industries using "captive" trucks exclusively for their own business, as well as from many "for hire" truckers.

New Mid-West Region Created By Pontiac

DETROIT—Pontiac has increased its number of regions to six with a mid-West region having headquarters at Kansas City, Mo. Allen Wright, formerly zone manager at Dallas, has been named manager of the new region. The change has been accomplished by reducing sizes of Chicago and Memphis regions. New region includes Lincoln, Denver, Kansas City, Dallas and Oklahoma zones.

Pontiac regional and zone sales staffs were in Pontiac this week, at which time they were shown preliminary layouts of 1935 model Pontiacs.

Ford Resumes Distribution of Parts in Milwaukee

MILWAUKEE—Parts business of the Milwaukee Ford assembling plant, transferred to Chicago about a year ago, is being returned to Milwaukee, according to W. E. Simons, branch manager. The present force of 50 is being doubled. Assembling was discontinued at the local plant in November, 1932 reducing it to a car sales branch. No word has been given out as to the possibility of resuming assembly work here but indications are considered favorable.

Proposed Change In Vehicle Codes Ready

WASHINGTON—In preparation for the Fourth National Conference on Street and Highway Safety to be held in Washington May 23-25, the Committee on Uniform Traffic Laws and Ordinances, appointed by Secretary of Commerce Daniel C. Roper, has completed revised drafts of the Uniform Vehicle Code and the Model Municipal Traffic Ordinance which will shortly be available in mimeograph form for criticism and suggestions. Copies may be obtained from the office of the conference here.

Hupp Sedan Price Up \$50

DETROIT—According to an announcement by Rufus S. Cole, vice-president and assistant general manager of the Hupp Motor Car Corp., the price of the series 417 sedan has been raised from \$795 to \$845. The coupe still carries the base price of this series—\$795.

Mrs. Eva Christina Sorensen

DETROIT—Mrs. Eva Christina Sorensen, mother of Charles E. Sorensen, Ford Motor executive, died here April 17 at the age of 76 following a long illness.

Picketing Limited In Toledo's Strike

Hearing On Injunction Proceedings Continues; Plant Operations Go On

TOLEDO—The hearing on the injunction proceedings brought in local courts by the Bingham Stamping and Tool Company, the Electro-Auto-Lite Company and the Logan Gear Company, limiting mass picketing at the companies' gates, has been continued. However, the agreement reached earlier in the week to limit picketing to 25 pickets at each gate has been continued.

Operations at all three plants are going forward. Auto-Lite reports more than 60 per cent operations with 80 per cent of the workers loyal and willing to work if protection is afforded. At the Bingham plant about 75 per cent of the normal day force was at work. At Logan Gear, where the strike was made effective Tuesday at 10 a. m., men at the plant took a vote and the day shift by 143 to 30 voted to stay on the job.

Auto-Lite strikers are demanding 10 per cent pay increase, recognition of union, and return of strikers to jobs. The company will sign no exclusive contract.

At Bingham and Logan Gear the battle is for a written agreement.

Dura and City Auto Stamping Co. have signed contracts with the union, but they do not call for the closed shop.

More than 500 communists of the Lucas County Unemployed Council joined in the mass picketing at Auto-Lite and several battles were staged. Immediate injunction against the communist group and socialist party of Toledo was granted by the court.

All plants are hiring workers to take place of strikers.

Murray in "High"

DETROIT—Unit production has reached a new high point in the various plants of the Murray Corporation here. During most of the current month employment has averaged around 12,000 for the full legal week. This total is in striking contrast with the 3700 workers employed on a 3-day basis last November. Vice-president Widman says that the company is as busy as it was in 1928 and 1929.

First Quarter Statements

Company	1934	1933
Graham-Paige ..	+\$15,142	—\$86,696
Seagrave Corp..	—12,242	—23,095
Johns-Manville Corp.	—76,081	—953,780
Mullins Corp....	+61,549	—126,469
Eaton Co.	+341,151	—237,179
Caterpillar Tractor	+787,477	—303,884
Indian Motorcycle Co.	+31,256	—48,826
E. G. Budd Mfg. Co.	—15,458	—397,488
Budd Wheel Co..	+59,177	—303,119

Business in Brief

Written by the Guaranty Trust Co., New York, exclusively for Automotive Industries

Despite the retarding influence of labor unsettlement, general business continued to improve last week. Contrary to the usual seasonal movement, the trend of retail trade was upward; and wholesale business also made a better showing. The heavy industries held up well, with operations in the steel industry increasing to 47.4 per cent of capacity.

Car Loadings Drop

Railway freight loadings during the week ended April 1 totaled 557,887 cars, which marks a decrease of 50,556 cars below those during the preceding week, an increase of 65,826 cars above those a year ago, and an increase of 12,246 cars above those two years ago.

Department Store Average

The Federal Reserve Board's preliminary adjusted index of department store sales for March stood at 76, with the 1923-25 average equal to 100, as against 71 for February and 69 for January. The volume of business in March was 44 per cent larger than that a year ago.

Electric Output Up

Production of electricity by the electric light and power industry in the United States during the week ended April 7 declined moderately below that during the preceding week but was 15.5 per cent above that a year ago.

Lumber Production Less

New business booked at the lumber mills during the week ended

April 7 was smaller than in any of the six weeks preceding, although it was 2 per cent larger than the weekly average for the first quarter of this year. Production, however, was 13 per cent above the first quarter weekly average.

Oil Production Better

Average daily crude oil production during the week ended April 7 amounted to 2,337,650 barrels, as against 2,324,850 barrels for the preceding week and 2,221,350 barrels for a year ago.

Bituminous Tonnage Higher

Production of bituminous coal during the last week in March amounted to 9,205,000 tons, as compared with 8,657,000 tons during the preceding week and 5,136,000 tons a year ago.

Fisher's Index

Professor Fisher's index of wholesale commodity prices for the week ended April 14 stood at 73.4, as against 73.5 the week before and 74.0 two weeks before. The current figure represents the fourth successive weekly decline.

Federal Reserve Statement

The consolidated statement of the Federal Reserve banks for the week ended April 11 showed decreases of \$5,000,000 in holdings of discounted bills and of \$9,000,000 in holdings of bills bought in the open market. Holdings of government securities remained unchanged.

Automotive Technicians Meet With Electro-Platers

DETROIT—Several papers of general interest to the automotive field will be read by representatives of the industry at the annual meeting of the American Electro-Platers' Society, which is to be held here during the early part of June.

The program follows:

Monday—June 11, 1 P. M.

"Summary of Researches on Plating at the Bureau of Standards"—Dr. W. Blum, Bureau of Standards, Washington, D. C.
 "Complete Report of Exposure Tests on Plated Steel with Recommendations"—P. W. C. Strausser (Research Associ-

ate for the A.E.S.) and Dr. W. Blum.
 "Plans for Investigating the Plating of Non-Ferrous Metals"—Dr. W. Blum.
 "Testing of Plated Metals for Compliance with Federal Specifications"—M. R. Thompson, Bureau of Standards.
 "Formal Discussion of Mr. Thompson's Paper"—by Wm. M. Phillips, General Motors Corp., Detroit, Chairman, Joint Committee on Specifications for Plating.

Tuesday—June 12, 9 A. M.

"Nickel Plating"—Mr. Ray Goodsell (Milwaukee Branch, A.E.S.), Racine Plating Works, Racine, Wis.
 "Bright Nickel Plating"—L. E. Eckelmann, Pyrene Manufacturing Company, Newark, N. J.
 "Relation of Coating Thicknesses to Service Life on Zinc Die Castings"—E. A. Anderson, New Jersey Zinc Company, Palmerton, Pa.
 "Ductility and Adhesion of Nickel Deposits"—F. P. Romanoff, Apollo Metal Works, LaSalle, Ill. (Electrochemical

Society Meeting, Asheville, N. C., April 26, 1934).

Tuesday—June 12, 8 P. M.

"Detergent Properties of Alkalies, Part I, Plating Room Cleaners," N. Promisel, Research Electrochemist, International Silver Co., Meriden, Conn.
 "Pictorial Study of Plating Conditions"—Wm. M. Phillips, Research Engineer, General Motors Corp., Detroit, Mich.
 "Does Chemical Control of Plating Solutions Solve the Electroplating Problems?"—Geo. B. Hogaboom (Newark Branch, A.E.S.), Research Engineer, Hanson - Van Winkle - Munning Co., Matawan, N. J.

Wednesday—June 13, 9 A. M.

"Recent Progress in Industrial Cleaning"—R. W. Mitchell, Magnus Chemical Company, Garwood, N. J.
 "Plating Plant Layout"—A. J. Lupien (Detroit Branch A.E.S.), Udylite Process Company, Detroit, Mich.
 "Copper Cyanide Plating, Its Peculiarities"—Elmer Woodmansee (Detroit Branch A.E.S.).
 "Concentrated Cyanide Plating Baths"—Dr. L. E. Pan, U. S. Research Corp., Long Island City, N. Y.

Thursday—June 14, 1 P. M.

"Rust Proofing before Color Finishing"—R. R. Tanner, Metal Finishing Research Corp., Detroit, Mich.
 "Rubber in the Plating Industry"—R. H. Kittner, American Hard Rubber Co., Akron, Ohio.
 "Some New Developments in Buffing Compositions"—Geo. M. Cunningham, National Oil Products Co., Harrison, N. J.
 "Chromium Plating on Sheet Zinc"—Chas. H. Proctor (New York Branch A.E.S.), Founder of the Society.

APEM Code Hearings Postponed by Everitt

WASHINGTON—Public hearings on seven proposed codes of fair competition supplementary to the Code for the Automotive Parts and Equipment Manufacturing Industry, announced for April 26 by Assistant Deputy Administrator I. D. Everitt, have been indefinitely postponed. Further notice will be given of the substitute date.

The industries covered by the codes are: Carburetor Manufacturing Product Group, Wheel and Rim Product Group, Automotive Radiator Manufacturing Product Group, Automotive Gasket Product Group, Oil Filter Product Group, Spark Plug Product Group, Automotive Lighting and Reflecting Devices Product Group.

Shipping Code Provisions Draw Traffic Body's Fire

CHICAGO—Certain sections of the proposed shipping code, as at present written, amount to a system of rigid rate regulation on all vessels flying the United States flag, says the National Industrial Traffic League, a nationwide organization of shippers.

The league will fight for revision of those sections of the code they believe objectionable. Especially is criticism directed against those sections of the code directing the filing of rate with the code authority, the administration of minimum rates and the adjudication of complaints with reference to rates. One specific objection was that certain provisions of the code placed the man who pays the freight bill at the mercy of the boat owners and would have the effect of deflecting traffic away from the water lines.

NRA Storage Trade Code Violation Brings \$25 Fine

NEW YORK—The first reported conviction under NRA for violation of the Motor Vehicle, Storage and Parking Trade Code occurred last week in Bronx Special Sessions Court.

A garage owner was convicted and fined \$25. He was charged with accepting a car for storage at \$10 per month without service when a sign before his place of business stated the rate for such storage was \$12 per month.

Stewart-Warner Officers Re-elected by Directors

CHICAGO—All officers of the Stewart-Warner Corporation were re-elected at a meeting of the board of directors. Operation and management of the Alemite Corporation, a division of Stewart-Warner, is under the same officers.

The officers are: R. J. Graham, chairman of the board of directors; E. V. R. Thayer, vice-chairman; Joseph E. Otis, Jr., president; F. A. Ross, vice-president in charge of manufacturing; F. A. Hiter, vice-president in charge of sales; T. T. Sullivan, secretary and treasurer, and E. H. Farrell, controller. James S. Knowlson was made a member of the executive committee, which now comprises, besides Mr. Knowlson, Eugene V. R. Thayer and Joseph E. Otis, Jr.

Mullins Co. Reduces Net Loss by \$427,681

A net loss of \$268,427 for the year ending Dec. 31, 1933, is reported by the Mullins Manufacturing Company, as compared with \$696,108 for 1932; this is a decrease in the net loss of \$427,681.

The company's balance sheet for 1933 shows among current assets cash, \$148,563; accounts and notes receivable, \$222,941; inventories, \$459,596. Total current assets are placed at \$831,100; current liabilities, \$465,749, and working capital, \$365,351.

Kinstler With Kelsey-Hayes

DETROIT—L. L. Kinstler has joined the sales staff of Kelsey-Hayes Wheel Corp. Mr. Kinstler has been connected with a number of automotive parts concerns in a sales engineering capacity, including Holley Carburetor and Budd Wheel Co.

Caterpillar Wipes Out All Bonded Indebtedness

PEORIA—The Caterpillar Tractor Company has announced the complete retirement of its \$10,000,000 five year gold note issue. The bonds were not scheduled to mature until 1935.

GMC Offers 1½ Ton Truck at \$595; Engine Rated at 70 hp. at 3300 r.p.m.

PONTIAC, MICH.—General Motors Truck Co. has entered the lowest-priced 1½-ton truck field with a new model called the GMC T-16. It has a gross rating of 9300 lb. and is being offered at a base price of \$595, the lowest ever quoted on a GMC truck of this capacity.

The engine, which has a displacement of 213 cu. in., is rated at 70 hp. at 3300 r.p.m. and is said to develop its maximum torque of 147 lb.-ft. over the speed range 1400-1800 r.p.m. Engine refinements include rifle-drilled connecting rods, main and connecting-rod bearings of the replaceable steel-back type, and electro-plated pistons. Power is transmitted through a truck-type clutch and transmission, needle-bearing universal joints and a tubular propeller shaft to a full-floating rear axle. Other chassis features include four-wheel mechanical brakes with Centrifuse drums at the rear, and demountable-type Spoksteel wheels.

A comprehensive line of bodies has been designed to combine service with attractive appearance. They include a panel body, stake and express bodies, delivery body, canopy body and platform body. Special bodies are built to customers' orders.

Cab doors are sealed to prevent floor drafts. The large, full-visions wind-shield of safety glass can be opened for ventilation, and there is also a cowl ventilator. The panel body is well insulated on the inside to keep the temperature within constant and prevent rumbling. A floor extension at the side of the driver provides extra load space

for carrying articles up to 12 ft. in length. Other features of this body include weather stripping on the rear doors, a sponge-rubber seal on the body, dome light, shock absorbers on rear doors, adjustable driver's seat, and a door lock.

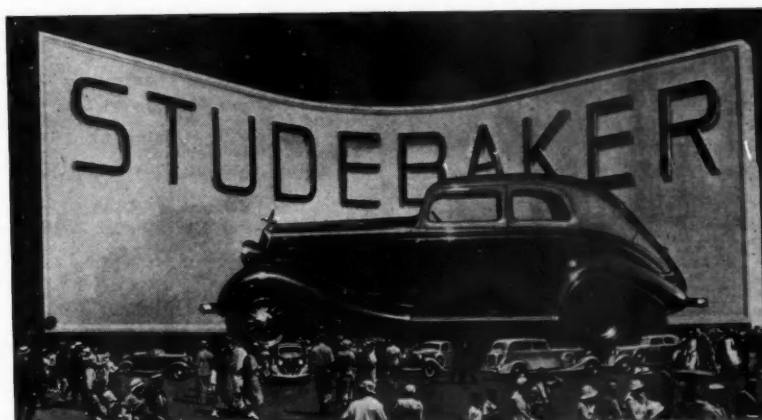
Stake bodies have welded stake pockets, a rub rail, swinging side gates with removable hinge pins, and a rear-vision plate mounted in the stake section directly back of the rear cab window. The inside dimensions of the delivery truck and the loading space of the canopy body both are 116½ by 54 by 54 in.

Wheelbases of the platform and the stake-body models are 131 in., while the platform truck has a wheelbase of 157 in. The high rack body is specially designed for hauling live stock. Body bolts are countersunk and the corners are latched with adjustable steel hooks. The dimensions are 141½ in. (length) by 81½ in. (width) by 66 in. (height). Customers for the T-16 line have a variety of 12 colors to select from.

William V. Kidder

LA CROSSE, WIS.—William V. Kidder, president of the Pyroll Co., died of heart disease at his home April 5, aged 53 years. He was one of the founders of the Motor Inventions Co. Mr. Kidder was a motor boating enthusiast and for 10 years was secretary of the Mississippi Valley Power Boat Association and editor of *The Open Exhaust*.

Studebaker's Model, World's Largest



Gigantic Studebaker to be exhibited at Century of Progress this summer. The model is 80 feet long, 28 feet high and 30 feet wide. The interior of this gargantuan model will be an auditorium seating 80 persons and there sound films will be shown. The car is so large an elephant could walk through its doors

N.L.B.'s Ruling Clashes

(Continued from page 498)

those belonging to the union as a condition of dealing with the representatives selected (in that election)."

All employees on the USL payroll on April 13, the order provides, are eligible to vote in the new election. In addition former employees who submit new claims of discrimination are to be allowed to vote, but their ballots are to be segregated and to be counted only where the Buffalo Board finds that their claims are substantiated.

The order does not state how the Buffalo Board is to determine who was employed on April 13 if the company again refuses to submit its payroll as it did in the case of the election held in February. At that time, the Regional Board attempted to clear this hurdle by requiring all voters to sign affidavits that they were on the payroll on Dec. 18, 1933, when the controversy started, or were employed by the company on the date of the election.

Moreover, in the subsequent settlement of discrimination cases, the order does not require the Regional Labor Board to recognize the principle laid down by the President that "where no lists of employees claiming to be represented have been disclosed to the employer, there shall be no basis for a claim of discrimination." Furthermore, in directing that in rehiring laid-off workers, they be taken back on the basis of seniority, the order ignores the President's views that married men with families should be reemployed first.

Reo Proxy Fight Ends

(Continued from page 499)

that a difference of opinion as to the policies to be pursued by the Reo Motor Car Company has arisen between R. E. Olds and me, and that certain individuals have sought to take advantage of this difference of opinion."

Mr. Olds and his group found themselves in harmonious control of the meeting, the best attended in the history of the company, and the slate of officers they had prepared was easily elected. The Board of Directors includes R. E. Olds, D. E. Bates, George E. Smith, R. A. DeVlieg, Carlton Higbie, W. S. Foster and Ray Potter. With the exception of Mr. Potter all are former members.

Officers named by the Board are D. E. Bates, president; George E. Smith, vice-president; Ray DeVlieg, vice-president; George L. Brown, secretary-treasurer; Dean M. Parsons, assistant secretary-treasurer. The Executive Committee consists of R. E. Olds, chairman; D. E. Bates, Ray DeVlieg and George E. Smith.

Discussing the outcome Mr. Olds said it was an interesting fight and he enjoyed every minute of it. He said.

"I hold no bitterness toward anyone involved. I have implicit faith in the experience and ability of the men chosen for its active direction. I have said right along that I was not looking for a job and that my only purpose in

seeking to perpetuate the present control was to give Reo a more aggressive management. It is a great company with a great reputation and deserves to grow and prosper. Under this group, with the program now in the process of development, I am sure it will."

Mr. Bates, the new president, has been associated with the company since 1905 and since 1907 has served as secretary and treasurer and director.

The retirement of Mr. Scott from active Reo management ends an association of 30 years with the same organization. About 35 years ago Mr. Scott was factory manager of the Toledo Machine and Tool Company. At that time Mr. Olds was ready to start production on the old curve dash Oldsmobile and brought Mr. Scott to Lansing as plant manager of the old Olds Engine company and later the Seger Engine Works.

In 1904 when the Reo company was formed by Mr. Olds, Mr. Scott became plant manager and a director.

CALENDAR OF COMING EVENTS

SHOWS

American Transit Company, Cleveland, Ohio	Sept. 22-27
Cleveland (Automotive Service Industries)	Nov. 19-23

MEETINGS

American Welding Society, New York City	April 26
U. S. Chamber of Commerce, Washington	May 1-4
American Petroleum Institute, Pittsburgh	May 22-24
National Street and Highway Safety Conference, Washington D. C.	May 23-25
S.A.E. Summer Meeting, Saranac Lake, N. Y.	June 17-22
American Society for Testing Materials, Atlantic City, N. J.	June 25-29
American Chemical Society, Cleveland, Ohio	Sept. 10-14
American Welding Society, New York City	Oct. 1-5

ANNUAL MEETINGS

National Battery Mfrs. Assoc., Cleveland, O.	May 16-18
Natl. Automobile Chamber of Commerce, New York, N. Y.	June 7
Natl. Safety Council, Cleveland, O.	Oct. 1-5

CONVENTIONS

American Gear Mfg. Assoc., Wilkesburg, Pa. (Annual)	May 3-4
American Society for Metals, New York City	Oct. 1-5
International Foundry Congress, Philadelphia	Oct. 22-26
American Foundrymen's Assoc., Philadelphia	Oct. 22-26

EXPOSITION

Natl. Exposition of Power & Mechanical Engineering (Biennial) New York, N. Y.	Dec. 3-8
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RACES

Indianapolis	May 30
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March Sales Soar

(Continued from page 499)

mately 102 per cent increase.

Commercial vehicle registrations amounted to approximately 34,000 units, as compared with 9900 during March, 1933, a gain of about 244 per cent, according to estimates based on returns from 16 states.

Individual Company Report

During the first three months of 1934, Buick sold \$17,510,103 worth of new Buicks in the United States for the first quarter, placing Buick in sixth position in the entire automobile industry from the standpoint of sales volume. During the first three months of this year Buick dealers delivered 12,051 cars at retail as against 9672 in the first three months of 1933. Sales in March this year nearly doubled those of March, 1933, with 5314 new cars delivered as compared with 2965. During the last 10-day period in March this year, 2365 cars were delivered to customers as against 1526 in the corresponding 10-day period of 1933.

Orders for more than 10,000 new Ford V-8 cars and trucks in excess of original commitments were received by the Ford Motor Company during the first ten days of April, it was announced today at the home offices here. If the demand during the balance of the month continues at the same pace, the total of orders in excess of original commitments for the full month will run to 20,000 or 25,000 units.

For the week ending April 7, 9,007 Plymouth cars were delivered at retail, an increase of 7.5 per cent over the previous peak week and more than three times greater than the same week of last year. Plymouth shipments for the week totaled 9,137 units, an increase of 94.2 per cent over the same week of last year.

Cadillac reports 4000 unfilled orders on file. First 10 days of April better than 200 per cent ahead of same period last year. Production on V-12 and 16 has been stepped up also now.

For the week ending April 7 Dodge dealers delivered 3,474 Dodge passenger cars, and 1,117 Dodge commercial cars and trucks—a total of 7,384 vehicles.

Hudson reports sales first week in April more than double first week in March.

Ford Motor Company, Ltd. Report '33 Net Profit

LONDON, ENG. — Without profits earned or dividends paid from subsidiaries, Ford Motor Co., Ltd., reported a net profit of £742,218 (approximately \$3,711,000) for 1933. The 1932 report showed a deficit of an almost identical amount.